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Effect of Fiscal Austerity on African Food Imports

Shahla Shapouri
Stacey Rosen



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ABSTRACT

Export earnings and credit are the key economic factors that will affect African countries' ability to import food, according to this econometric analysis. Projections for 1994 indicate that the region's low-income countries would suffer the most from any declines in export earnings or credit. Choices between food and raw materials imports would favor food, hurting the economies of import-dependent countries in the long term. A continuing pattern of credit withdrawal from these developing nations would spell reduced trade for the world's food-exporting nations.

Keywords: Developing countries, imports, food imports, foreign credit, foreign exchange earnings

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SUMMARY

As Africa's financial conditions worsen, export earnings and credit will be the key factors influencing the region's food-importing ability. Steady withdrawal of credit from developing African nations will shrink their import capacity, spelling trade declines for the food-exporting nations of the world. Forced to make hard choices, import-dependent African countries will give priority to purchases of food over nonfood items such as raw materials, slowing the region's long-term economic growth.

The authors used econometric analysis to study the effects of individual economic factors on 25 nations' importing capacity, concentrating on food. The study countries form three groups: low-income, middle-income, and oil-exporting nations. Because their economies vary widely, the report's conclusions are representative of the entire continent. Export earnings were found to influence most a country's capability to import food items commercially. Credit followed closely. Other factors were domestic food production, import capacity, food aid, and world food prices.

High overall capability to import translates into strong food-importing behavior, since political realities dictate continued food availability and since African consumers have developed strong preferences for the foreign staples of wheat and rice. Any deterioration in the financial situation of low-income countries, therefore, reduces food imports and increases vulnerability to malnutrition and loss of life. Credit is less crucial for middle-income and oil-exporting countries.

Sufficient foreign exchange supplies and changes in domestic production are the two economic conditions that directly affect food imports, according to the report. World food prices, on the other hand, had little effect on how much food the study countries buy from abroad.

Food aid was found barely to affect commercial food imports for two major reasons: aid is either donated to combat national emergencies or is so stable that it hardly affects the region's commercial food-buying patterns. For instance, in nations devastated by emergencies food aid is used to supplement their limited commercial import capacity, while nations reliant on food aid base their food-importing decisions on assurances of receiving predictable annual quantities of donated food.

The authors used four scenarios to project how various financial conditions will influence the region's food-importing patterns by 1994. Countries would allocate more of their available foreign exchange to food, rather than nonfood, imports. Because most countries already restrict imports of luxury items, this reallocation translates into a cut in imports of essential materials, harming the region's long-term economic progress.

This report details export earnings histories, debt situation, use of grants, reserve levels, and revenue sources such as tourism, remittances from workers abroad, and waterway user fees. It also chronicles how the petroleum price downturn altered recent food-buying patterns. Country data tables profile economies of the 25 study nations.

Note:

This report uses metric units throughout:
1 metric ton = 2,204.62 pounds.

Effect of Fiscal Austerity on African Food Imports

Shahla Shapouri
Stacey Rosen*

INTRODUCTION

Future import behavior of African countries becomes less certain as their financial conditions worsen. The region's economic vulnerability increases because of its reliance on imports of essential commodities such as food, spare parts, and raw materials.

To fund imports, most African countries use earnings from the export of a few primary products. They supplement the revenues with foreign credit and grants. Terms of trade recently have turned against African exporters of primary commodities, and net external financial flows decreased sharply. Imports then declined or stagnated. Some low-income African countries' inability to buy food imports contributed to famine and loss of life. In middle-income African countries, the drop in exports played a key role in constricting the supply of inputs used for domestic manufacturing, worsening economic decline.

Faced with financial problems, national policymakers' choice of whether to import commercially food or nonfood products becomes crucial, particularly when food shortages and economic stagnation coincide. Our study's goal was to identify and to quantify the determinants of imports for 25 African countries, concentrating on food imports. We present key information on the study countries' financial situation, their export earnings histories, and what role foreign financial assistance plays. Statistically estimated functions describing each nation's import capacities and food import levels are then analyzed in the context of a changing economic environment. We forecast levels of total import capacity and of food imports for a 10-year period by simulating prospective conditions. 1/

We chose 25 countries for the analysis so that diverse economic structures were represented. The countries were grouped into three categories. Oil exporters were Algeria, Nigeria, Egypt, Tunisia, Cameroon, and Ivory Coast. Middle-income nations, which have a per capita gross domestic product (GDP) of \$400 or more, were Lesotho, Senegal, Zimbabwe, Zambia, and Morocco. The low-

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1/ Food imports as used in this report refer to commercial food imports.

income group was Ethiopia, Somalia, Gambia, Liberia, Kenya, Mali, Benin, Sierra Leone, Tanzania, Zaire, Niger, Madagascar, Togo, and Sudan. Because the study was performed on a large number of African countries, its conclusions should apply to the whole continent.

The feature common to all 25 countries is their growing dependence on food imports over the last two decades. For example, during 1982-84, low-income countries like Gambia and Somalia, middle-income nations like Lesotho and Morocco, and oil producers like Algeria, Egypt, and Tunisia imported almost half their food. Growing import dependency took place simultaneously with decline or stagnation of export commodity prices. Deteriorating terms of trade forced these countries to search for other sources of foreign exchange to head off a decline in imports. Foreign borrowing grew at such a rapid pace between 1973 and 1983 that, in half the study countries, outstanding debt increased about tenfold. As debt grew, foreign capital inflow declined, compounding pressure on these countries' finances. Shrinking export earnings and tightened credit availability forced a decline in total imports. African governments thus had to allocate scarce foreign exchange among food and non-food commodities from abroad.

REGIONAL FINANCE SITUATION

A country's financial condition both determines its ability to import now and establishes its base for future economic growth. In all study countries, deteriorating domestic economies and global factors led to a widespread financial crisis. The current account deficit for these countries as a whole increased from \$1 billion in 1970 to \$6 billion in 1976 (table 1). It continued to grow to \$13.8 billion by 1983, a more than twofold increase. The countries hardest hit, in terms of absolute deficit size and deficit growth, were Nigeria and Egypt. In 1983, Nigeria's deficit stood at \$4,188 million and Egypt's amounted to \$3,544 million. They were followed by Ethiopia, Niger, Senegal, Cameroon, Ghana, Tanzania, and Madagascar, each facing more than a fivefold increase in its current account deficit during 1976-83.

The runups in deficits resulted from long-term deterioration in the terms of trade, mainly for nonoil commodities, and widely fluctuating export volumes, especially in countries dependent on agricultural exports. From 1976 to 1983, the number of countries posting negative trade balances increased slightly from 17 to 19, while the overall trade deficit increased by about twentyfold.

Some countries, such as Egypt, partly offset their trade imbalances with foreign exchange inflows from tourism and remittances. In countries such as Ethiopia, Kenya, Lesotho, Senegal, Somalia, Benin, Egypt, Morocco, and Tunisia, these kinds of extra earnings cover a large part of the trade deficits and reduce the balance of current accounts. Other study countries used grants, borrowed abroad, or drew down foreign exchange reserves to offset their growing trade deficits and government expansionist fiscal policies that could not be met with domestic financial resources.

Export Performance

Like most developing countries, the study countries have export sectors based on a single or, at most, a very few primary commodities. These major commodities account for a significant portion of GDP and government revenue. Therefore, export market performance plays an important role in economic growth and

is a crucial factor in governments' attempts to deal with their balance of payment difficulties.

Table 1--Current account balances, 1970, 1976, and 1983

Country	1970	1976	1983
<u>\$US million</u>			
Low-income:			
Benin	(1)	(67)	(147)
Ethiopia	(32)	(28)	(171)
Gambia	1	(17)	(29)
Kenya	(49)	(124)	(118)
Liberia	NA	(58)	(136)
Madagascar	10	(28)	(256)
Mali	(2)	(42)	(98)
Niger	0 <u>1/</u>	(28)	(116)
Sierra Leone	(16)	(60)	(110)
Somalia	(6)	(69)	(150)
Sudan	(42)	(138)	(220)
Tanzania	(36)	(34)	(225)
Togo	3	(27)	(78)
Zaire	(64)	(833)	(310)
Middle-income:			
Lesotho	NA	(34)	(7)
Morocco	(124)	(1,398)	(892)
Senegal	(16)	(93)	(302)
Zambia	108	(124)	(169)
Zimbabwe	NA	NA	(460)
Oil-exporting:			
Algeria	(126)	(886)	(86)
Cameroon	(30)	(92)	(418)
Egypt	(148)	(806)	(3,544)
Ivory Coast	(38)	(249)	(919)
Nigeria	(368)	(357)	(4,188)
Tunisia	(53)	(409)	(693)
Total	(1,029)	(6,000)	(13,841)

() denotes a negative number.

NA = Not available.

1/ Actual amount was -0.1.

Source: (8). (Underlined numbers in parentheses refer to items cited in References at the end of this report.)

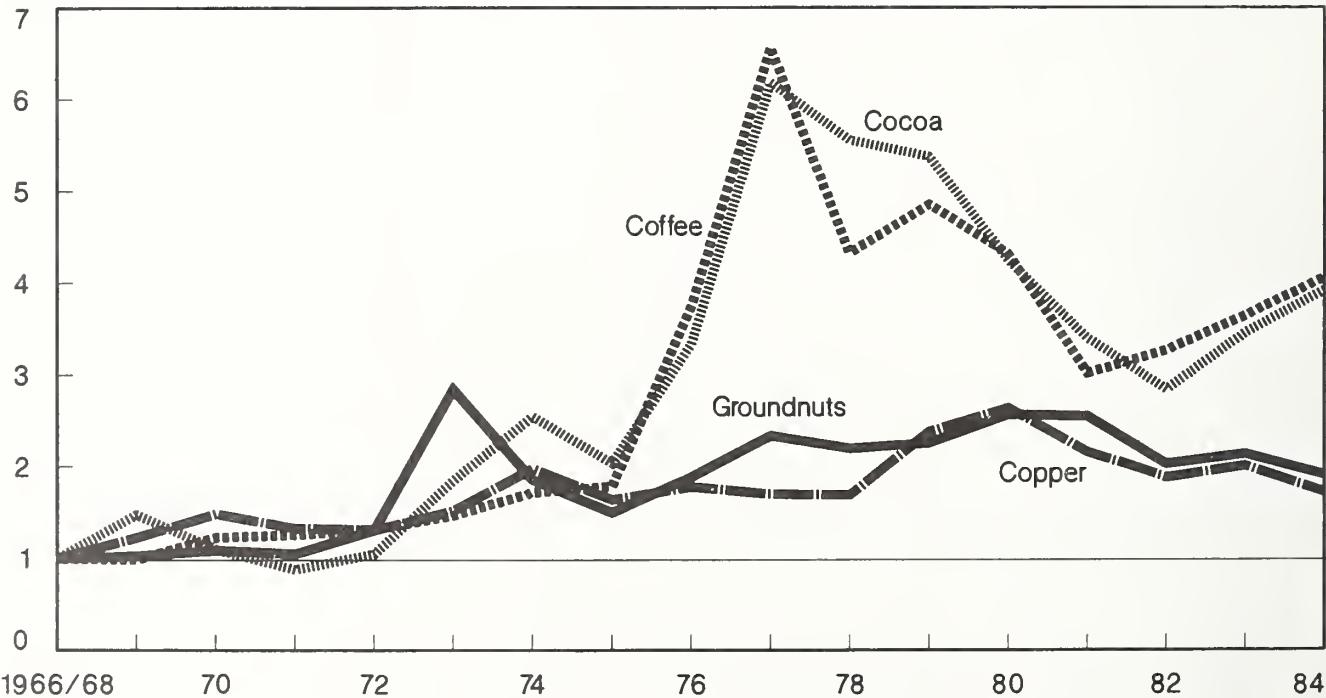
Trends in world commodity prices directly influenced how study country exports performed. The shock of the oil price increase in 1973 was followed by an increase in commodity prices, sending the industrial world into a recession. Recession, in turn, lowered demand for primary commodities. After the second surge of oil prices in 1979-80, prices of nonoil primary commodities did not recover. In fact, deterioration in terms of trade for nonoil primary commodities during 1981-82 was the worst since pre-World War II. The overall index of nominal prices declined by 13 percent in 1982, following a 15-percent drop (in dollar terms) in 1981. Over the last two decades, prices of primary commodities declined the most in 1975, falling by 19 percent and recovering in 1976 by 15 percent.

Raw materials are the main exports of many of the study countries. These countries' exports, with few exceptions, do not constitute a large share of world trade. But, these exports represent important revenue sources from their viewpoint (table 2).

World prices of agricultural commodities, in particular, were hit very hard. In real terms, the price of sugar, a relatively unimportant export, declined the most, with 1984 world prices at about one-fifth of their 1974 level. Groundnut prices were cut by one-third during 1973-84, mainly because of greater competition from other vegetable oil products such as soybeans. Beverage prices also fell significantly: coffee, cocoa, and tea dropped 40 percent between 1977 and 1984 (fig. 1).

Figure 1
World Prices for Major African Exports, 1966-84

1966-68=1



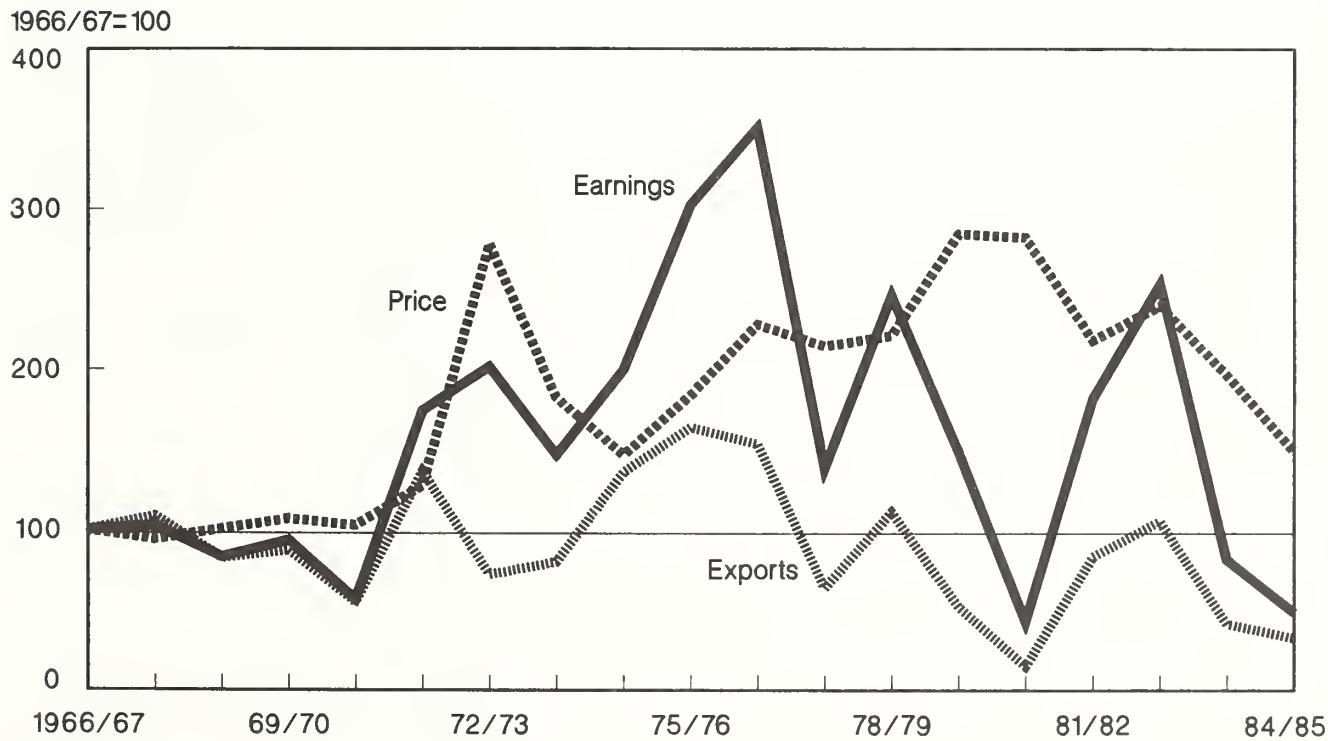
Source: (8)

Countries that depend on metal exports, such as Zambia and Zaire, are faced with shocks to their traditional revenue sources. Materials substitution has led to a decline in the use of metals. For example, the use of plastic, fiber optics, and aluminum in place of copper has led to a declining price trend for copper since 1976.

Oil, the major revenue source in Nigeria, Algeria, and Egypt, showed price volatility since the 1970's because of erratic demand and supply. After oil's sharp price increase in 1973-74, industrialized nations made major progress in conserving energy. Some countries stimulated oil exploration and subsequently increased their domestic supplies. With the growing global oil glut in the 1980's, oil producers may face further near-term declines in export earnings. Overall, the weakness of commodity prices compared with prices of manufactured goods caused slumping terms of trade among study countries (table 3). The resulting hardships mean that study countries now must devote a larger share of their domestic output than in 1970 to obtain the same volume of foreign goods or services.

In addition to export unit values, the level of export earnings depends on the supply situation in individual countries. Factors such as political events, changes in government policies affecting a particular commodity, and drought can overshadow price as a force in the market place. Senegal is a good example of how these various factors interact over time (fig. 2). In 1981/82, the country's balance of payments improved as a result of both policy changes

Figure 2
Senegal's Peanut Exports, 1966-85



Source: (8)

Table 2--Share of world trade: Selected export commodities
of study countries, 1980

Export and country	Value of exports	Share of world trade
	<u>\$US thousand</u>	<u>Percent</u>
Cocoa:		
Ivory Coast	857,565	17.21
Nigeria	485,445	9.74
Cameroon	273,459	5.49
Togo	38,444	.77
Coffee:		
Ivory Coast	485,645	3.88
Cameroon	304,744	2.43
Kenya	291,384	2.33
Ethiopia	272,338	2.17
Madagascar	196,164	1.57
Zaire	166,440	1.33
Tanzania	138,655	1.11
Tea:		
Kenya	156,227	10.24
Tanzania	22,482	1.47
Sugar:		
Zimbabwe	70,612	.45
Cotton:		
Sudan	238,209	2.91
Zimbabwe	85,295	1.04
Mali	84,372	1.03
Ivory Coast	66,274	.81
Tanzania	52,030	.64
Cameroon	42,738	.52
Nigeria	34,323	.42
Tobacco:		
Zimbabwe	176,136	5.11
Rubber:		
Liberia	102,183	1.14

Continued--

Table 2--Share of world trade: Selected export commodities
of study countries, 1980--Continued

Export and country	Value of exports	Share of world trade
	<u>\$US thousand</u>	<u>Percent</u>
Wood:		
Ivory Coast	271,297	3.60
Cameroon	110,886	1.47
Liberia	65,297	.87
Copper:		
Zambia	1,278,599	9.14
Zaire	702,179	5.02
Iron ore:		
Liberia	310,262	4.25
Crude petroleum:		
Nigeria	25,614,328	7.71
Algeria	12,870,447	3.87
Egypt	1,761,823	.53
Fertilizer, crude:		
Morocco	750,516	39.43
Togo	135,060	7.09
Senegal	77,887	4.09
Tunisia	54,518	2.86
Algeria	25,417	1.34
Fertilizer, manufactured:		
Tunisia	164,502	1.85
Morocco	38,187	.43
Senegal	28,027	.32

Source: Compiled from (7), table 4.4.

and good weather. Despite favorable weather in 1982/83, Senegal's balance of payments deteriorated primarily because world groundnut prices fell to their lowest level in a decade. Poor weather in 1983/84 cut groundnut production to a third of its expected level. Production in other major exporting countries also declined significantly, leading to a jump in groundnut prices from \$445 per metric ton in 1983 to \$635 in 1984. This price rebound allowed Senegal to recover most of its deficit. Senegal's case is typical, demonstrating that worsening balance of payments is the result of complex internal and external factors that could positively or negatively affect the study countries in any given year.

Table 3--Changes in terms of trade, 1970-84

Country	Terms of trade				Primary export
	1970	1981	1983	1984	
:				:	
: -----Index (1980 = 100)-----					
:					
Low-income:	Benin	177	97	88	cocoa
	Ethiopia	156	68	86	coffee
	Gambia	143	130	113	groundnuts
	Kenya	99	87	88	coffee
	Liberia	189	93	104	iron ore
	Madagascar	113	79	90	coffee
	Mali	120	110	115	cotton
	Niger	170	84	92	uranium ore
	Sierra Leone	145	84	89	diamonds
	Somalia	157	109	116	livestock
	Sudan	98	103	87	cotton
	Tanzania	108	88	91	coffee
	Togo	69	91	80	phosphate
	Zaire	197	87	90	copper
:					
Middle-income:	Lesotho	NA	NA	NA	wool
	Morocco	NA	108	100	phosphate
	Senegal	101	104	87	groundnut oil
	Zambia	263	81	82	copper
	Zimbabwe	NA	81	111	tobacco
:					
Oil-exporting:	Algeria	20	116	102	oil
	Cameroon	96	78	74	oil
	Egypt	NA	113	103	oil
	Ivory Coast	97	92	98	cocoa
	Nigeria	19	112	93	oil
	Tunisia	NA	100	98	oil
:					

NA = Not available.

Source: (8).

Growth in Borrowing

When foreign exchange earnings derived from exports are inadequate to increase imports and investments, a government's only option is to secure external financing. Most African countries have had limited access to borrowing. The purpose of borrowing was to supplement small domestic savings, increase investments, and increase consumption. Credit was provided based on projects whose profitability creditors monitored closely. Because few countries borrowed to finance their current account deficit, debt and debt service levels were more manageable.

The major developments which took place after 1973 and led to an increase in the outstanding debt of African countries were increased international financial liquidity and low interest rates.

The availability of foreign capital, low borrowing rates, and the 1973-75 commodity price boom all converged, encouraging these countries to expand investments and creating a link between their finances and those of industrialized nations. After 1973, the recession in the industrialized nations and their more protectionist measures retarded the export growth rate of African study countries even further.

Inflexible domestic policies and the economic structure of these countries aggravated the effect of external factors. For example, inability to cut back consumption levels from those attained during periods of high commodity prices and high income was common. Most countries initially maintained unrealistically high investment levels based on borrowing. As credit became scarce, however, they all cut back more on investment than on consumption. In countries such as Egypt, Morocco, Tunisia, and Sudan, part of the borrowed funds was used to import food because of government commitments to make sufficient quantities of staples available to the public at low prices. The remaining credit was used to finance large government ventures, many of which contributed little or nothing to economic growth or foreign exchange earnings.

Countries with external and internal political problems like Morocco and Sudan allocated larger budget shares to defense. After a boom in phosphate prices, Morocco increased investment from 5 to 20 percent of GDP in just 4 years, from 1973-77. As terms of trade worsened, Government borrowing grew from \$1 billion in 1973 to \$10 billion in 1983, or about 80 percent of GDP. Sudan's debt increased from \$3 billion to \$5 billion from 1979-82; other obligations such as military and privately held debt were estimated to have risen to \$7 billion. By 1984, Sudan faced an outstanding debt of about 10 times its export earnings and an import bill higher than its export earnings. Sudan's current account deficit grew to about 10 percent of GDP, while input and fuel shortages hampered all economic activities. Even under the optimistic assumptions of the World Bank, Sudan's severe financial problems and internal conflicts rule out significant improvement in the situation in the near future.

Growth in the outstanding debt was generally greater among the middle-income and oil-producing countries (table 4). For instance, outstanding loans in Cameroon, Ivory Coast, Nigeria, Algeria, Egypt, and Morocco increased about tenfold during 1973-83. Among this group of countries, Ivory Coast had the greatest increase, about thirteenfold. Outstanding debt among low-income countries, although lower in absolute terms, grew at the same trend during 1973-83: Lesotho had the highest growth at sixteenfold, followed by Madagascar, Niger, Senegal, Somalia, and Sudan, all having tenfold growth.

Table 4--Debt trends, 1966-84

Country	Trend in outstanding debt				Debt service as a share of--						
	: 1966-80: 1981-82		: 1982-83: 1983-84		: GNP 1970		: Exports 1970 : 1984				
	: -----Percent per year-----				-----Percent-----						
Low-income:											
Benin 1/	18.8	53.7	9.0	(5.9)	0.7	2.5	2.3	9.3			
Ethiopia	14.5	7.8	17.6	13.3	1.2	1.8	11.4	16.1			
Gambia	24.5	10.6	4.1	(.4)	.2	4.2	.5	7.7			
Kenya	17.3	4.9	(1.4)	10.0	1.8	6.1	5.4	22.9			
Liberia	9.5	.4	10.8	7.9	5.5	4.3	8.1	8.6			
Madagascar	18.4	14.2	2.2	(4.1)	.8	3.9	3.5	24.3			
Mali	12.1	10.5	12.6	6.0	.2	1.7	1.3	8.0			
Niger	27.3	(.3)	4.9	7.2	.6	6.7	3.8	18.3			
Sierra Leone	12.4	10.1	(3.2)	(5.3)	2.9	1.0	9.9	7.2			
Somalia	NA	12.2	7.3	(.2)	.3	2.0	2.1	28.9			
Sudan	23.3	12.7	11.0	(.4)	1.7	1.2	10.7	11.0			
Tanzania	21.2	9.2	8.1	(.4)	1.2	1.7	4.9	14.1			
Togo	30.4	(4.2)	2.0	(17.9)	.9	10.1	2.9	26.3			
Zaire	24.4	(1.9)	8.0	(6.6)	2.1	4.1	4.4	7.7			
Middle-income:											
Lesotho	21.8	52.8	13.5	.5	.4	3.8	8.5	5.0			
Morocco	21.2	13.4	4.3	NA	1.5	8.3	8.4	38.2			
Senegal	21.2	25.0	21.2	3.8	.8	2.5	2.8	7.2			
Zambia	18.9	6.7	10.1	6.1	3.5	4.7	5.9	11.3			
Zimbabwe 1/2/	16.4	38.5	24.9	(5.0)	.6	5.4	2.3	20.0			
oil-exporting:											
Algeria	30.9	(9.5)	(7.1)	(8.9)	.9	8.7	3.8	33.1			
Cameroon 1/	27.0	(4.5)	(6.1)	(4.9)	.8	3.0	3.1	8.9			
Egypt	18.6	8.4	.4	37.8	2.1	2.9	4.4	79.7			
Ivory Coast	27.6	12.8	(2.1)	1.1	2.7	11.1	6.8	21.3			
Nigeria	18.3	43.9	38.5	2.1	.6	4.2	4.2	30.3			
Tunisia	16.9	5.8	(1.3)	NA	4.5	7.4	19.0	22.3			

() denotes a negative number.

NA = Not available.

1/ Real GDP growth: Zimbabwe, 1970-80; Cameroon, 1969-80; Benin, 1970-80.

2/ Outstanding debt growth: Zimbabwe, 1973-80.

Sources: (8, 10).

Grants

Grants are transfers of money from one country to another with no obligation to repay. In the face of weakened export earnings and credit receipts, grants provided only limited help in maintaining import levels. Although they grew significantly in a number of the study countries, grants were an erratic source of funding for the most part. In Kenya, for example, grants rose from \$380 million in 1980 to \$1.3 billion in 1983. Conversely, grants in Morocco dropped from over \$1 billion in 1983 to \$140 million in 1984. In many countries, especially the oil exporters, grants remain insignificant. Hence, they were not the most significant determinant of import levels.

Reserves

The low level of foreign exchange reserves in most study countries shows how vulnerable they are to a drop in credit or export earnings. As recently as 1982-84, reserves in the 14 low-income countries averaged less than \$60 million per country. Average annual growth in reserves from 1966-84 equaled less than 3 percent. Reserves declined in 10 of the 14 countries during 1980-84. A comparison of reserves to import levels shows that the situation is worsening. In 1966-68, reserves equaled about 25 percent of imports for this group. However, in 1982-84, reserves fell to just 12 percent of imports.

Reserve levels in the middle-income countries appear to be worse. In 1982-84, reserves averaged only \$56 million per country. Since 1980, reserves in every middle-income country fell. In 1966-68, reserves equaled about 18 percent of imports but fell to 6 percent in 1982-84.

Oil exporters saw the most growth in reserves, over 7 percent annually during 1966-84. In 1982-84, reserves averaged over \$700 million per country. Since 1980, however, reserves have fallen significantly in each country except Ivory Coast. A ratio of reserves to total imports indicates that oil exporters had the same difficulties as the other groups. In 1966-68, reserves equaled more than 20 percent of imports but dropped to 10 percent during 1982-84.

IMPORT CHARACTERISTICS

In developing countries, the growing dependency on imports is a result of slow growth in domestic output coupled with steady growth in demand. This situation creates tremendous imbalances between the supply of goods (particularly food) and consumer demand. Selected graphics and mathematical frameworks introduce the reader to the region's import dynamics and show how global financial forces are affecting African governments' import policy choices. Because many African countries are not self-sufficient in food, we concentrate on food import policy prospects.

Traditional commodity models of import demand use a free market approach to estimate structural demand and supply relationships to drive import demand as a residual. For example, in a general equilibrium context, shown in figure 3, at the initial situation E, the price line PP is tangent to the production possibility frontier of a food-importing country. At point E, the country produces two commodities, food and nonfood, at the efficient level of X_0 and Z_0 , respectively. Optimal consumption preference between food and nonfood commodities is determined by maximizing the utility function at point C, where the indifference curve of consumption is tangent to the price line. At point

C , demand for food exceeds domestic production, leading to the food import level X_0Z_1 and export of the excess supply of nonfood commodities Z_0Z_1 . Under these circumstances, balance of trade by the food-importing country is maintained and imports are constrained by the value of nonfood exports.

In practice, developing countries commonly import more than they can fund from export earnings. They then use other sources of foreign exchange such as foreign borrowing, grants, and cash reserve adjustments to support imbalances. This can be represented in figure 3 by a shift in line PP to the right. Growing financial problems force the countries to limit use of scarce foreign exchange by controlling and managing foreign currency.

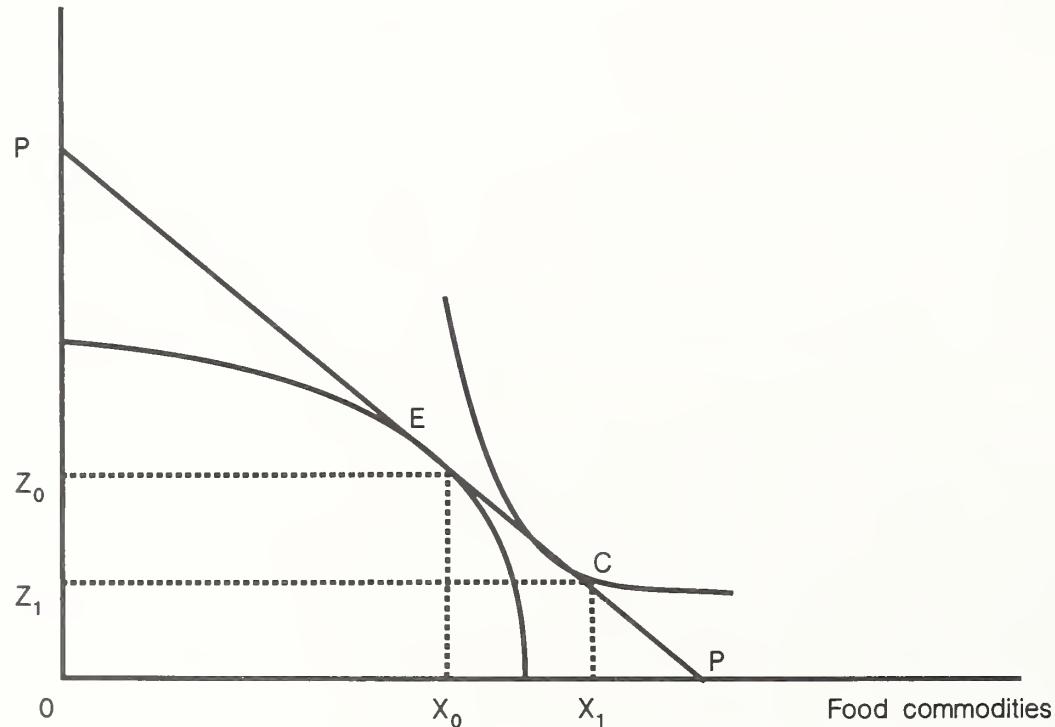
In this situation, foreign assistance and the purchasing power originating from export earnings limit the country's import capacity:

$$CM = f(EX, CF, CR, GR) \quad (1)$$

where CM equals import capacity, EX represents export earnings, CF equals net foreign credit, CR represents foreign exchange reserves, and GR equals grants. Note that equation (1) may hold under a condition where there is a lag between receipt of foreign exchange and spending. The lag is caused by import restriction policies requiring traders to post advance deposits and pay exchange licensing fees.

Figure 3
Imports and Exports in General Equilibrium

Nonfood commodities



Faced with constraints on foreign exchange, governments are forced to make difficult choices between food and nonfood imports. The governments of most study countries hold direct or indirect responsibility for food importing because they issue trade regulations that set import priorities.

Government priorities vary somewhat from country to country. However, food availability usually heads the list because any domestic production gap must be filled with foreign commodities. In countries with declining production trends, scarcities lead to growing import dependency. Increasing food imports crowd out spending on raw materials and spare parts that propel an economy forward, raising concerns over a country's economic health.

However, to allow food shortages to persist is to take serious political risks. As a result, political concerns along with other forces shape import decisions. We can therefore hypothesize that government food imports (QM) will be based on an anticipated level of domestic food availability, import capacity, and other exogenous variables such as food-import prices and national policies aimed at improving diets.

The food import relationship, therefore, can be summarized as follows:

$$QM = f(CM, QP^*, P^*, T) \quad (2)$$

where QP^* is expected domestic food production, P^* is the expected relative price of food and nonfood, and T is the other unaccounted policy variable. Effects of these variables are expected to vary by country depending on its financial capacity, the size of its food import share, and its overall policy goals.

ESTIMATED FOOD IMPORT DEMAND

Although governments recently have been more inclined to shift their food policies toward increasing consumer prices and curbing consumption to meet foreign exchange shortages, political risks exist. Strikes in Egypt in 1980, in Morocco and Tunisia in 1984, and in Sudan in 1985 partly resulted from government moves toward higher consumer food prices. The Sudanese strike led to the downfall of the Government. Thus, government policymaking must be considered a determinant of trade behavior. In fact, government intervention in trade has been a key characteristic of most of the African countries. Governments have explicit and implicit objectives in regulating imports and exports. These include reducing price fluctuations of traded commodities, using limited foreign exchange for imports of the most essential commodities, earning revenue from trade taxation of luxury commodities, and, in some cases, protecting domestic industry.

Overview

With the press of poor national finances, governments of most study countries take direct responsibility for determining the optimum levels of imported commodities to achieve specific state objectives. For instance, governments are deciding to import more or less than consumers are willing to buy at the border price or, alternatively, are taxing or subsidizing imports to restrict or stimulate supply.

Specifying the Model

Recognizing data limitations and expected behavioral differences among governments, we developed a standard import model. The model used variables drawn from available basic data. In our study, we assumed two separate functional relationships. First, financial constraints limit overall import capacity. Second, governments, if they have the capacity to import, make choices between food and nonfood imports.

We hypothesized that the overall capacity of imports is based on net flow of credit and export earnings:

$$CM = f(CF, EX) \quad (3)$$

In equation (3), the capacity to import (CM, the total value of imports in dollar terms as a proxy for import capacity) is a function of the change in net capital flow (CF, in dollar terms, which represents the change in outstanding debt minus debt service payments) and export earnings (EX, in dollar terms). In these countries, any change in foreign exchange reserves and grants could also change their capacity to import. However, export earnings and credit are normally the major variables determining foreign exchange availability. Note that we used changes in official outstanding loans in the final specification because data on private borrowings and actual debt service payments (especially debt payment rescheduling in recent years) were lacking. 2/

We hypothesized that a government's decision to import food commercially is based on some specific target amount of food availability designed to meet national needs within financial constraints. Because the "expected" level of domestic food availability was unknown, we used actual domestic food production and food aid to represent anticipated food availability in a government food-import decisionmaking process.

$$Q_{fm} = f(Q_{dp}, P_{fw}, Q_a, CM) \quad (4)$$

In equation (4), we specified the quantity of commercial food imports (Q_{fm} , total quantity of cereals imported commercially) as a function of total domestic food production (Q_{dp} , total quantity of domestic cereal production), import capacity (CM, total value of imports which is a function of export earnings and credit, equation (3)), world food prices (P_{fw} , in U.S. dollars, which is deflated by the price index of nonfood items to show terms of trade between food and nonfood imports), and quantities of food aid received (Q_a , for those countries receiving food aid). Food production, imports, and food aid in the study countries refer strictly to the cereals millet, sorghum, wheat, maize, rice, teff, and barley, which account for more than 60 percent of their total food consumed. The high correlation between cereal production and other food items underpinned our assumption that cereal production is a proxy for total food production.

2/ Data on debt service obligations were not used.

We used a recursive model based on equations (3) and (4) to estimate import demand elasticities for 25 countries, using the period 1966-84 (table 5). We

Table 5--Calculated import elasticities

Country	Equation (3):		Equation (4):			
	Elasticity of		Elasticity of commercial			
	total import value:		food imports			
	with respect to--:		with respect to--			
	Export	Food	Total import value:	World price:	Food	
	Credit	earnings	production	ratio	aid	
	(1)	(2)	(3)	(4)	(5)	(6)
Low-income:						
Benin 1/3/	.84*	.74*	(1.24)*	0.65*	(1.10)*	na
Ethiopia 3/	.88*	.02	(3.27)	.78	na	.04
Gambia	.39*	.46*	(.38)	.38*	(.24)	.03
Kenya 1/3/	.46*	1.41*	(3.82)*	1.53	na	(.14)
Liberia 3/	1.29*	.91*	(3.45)*	1.23*	(.34)*	.07*
Madagascar 5/	.46*	1.26*	(1.13)	.93*	(.06)	.14
Mali 3/	.89*	.66*	(2.34)	.46*	na	.13*
Niger	.39*	.89*	(1.45)*	.72*	(1.42)*	.02
Sierra Leone 5/	1.08*	.97*	(2.05)*	.43*	.83*	.01
Somalia 4/	.55*	.65*	(.91)	.10	(.34)	.07
Sudan 1/5/	.42*	.16	(.35)	.10	(.21)	(.06)*
Tanzania 1/	.51*	.65*	(2.50)	1.54	(.74)	(.05)
Togo 3/6/	.38*	.51	(.20)	.36*	(1.33)*	na
Zaire 4/	.38*	.34	(.24)	.66*	(.24)	(.05)
Middle-income:						
Lesotho 5/6/	.66*	.55*	.43	.28*	(.36)	0
Morocco	.53*	1.09*	(1.74)*	1.23*	na	(.22)
Senegal 4/	.51*	.63*	(.40)*	.21*	(.26)*	.17*
Zambia 1/7/4/	.34*	.31*	(1.34)*	.61	(1.06)*	0
Zimbabwe 4/	.55*	.65*	(2.32)*	.56	(1.79)	na
Oil-exporting:						
Algeria 5/	.46*	.59*	(.49)*	.68*	(.21)	na
Cameroon	.53*	.27*	(.87)*	.45*	(.61)*	na
Egypt 4/	.78*	.01	(1.48)	.46*	(.24)	.02
Ivory Coast 3/6/	.35*	.98*	.23	.25	(1.30)*	na
Nigeria 1/3/6/	.32*	1.11*	.30*	.45*	(.81)*	na
Tunisia	.59*	.86*	(3.99)*	1.24*	na	(1.13)

() denotes a negative number.

na = Not applicable.

* denotes significance at the 90-percent level.

1/ In equation (3), both independent variables are lagged.

2/ In equation (3), export earnings are lagged.

3/ In equation (4), all independent variables are lagged.

4/ In equation (4), production is lagged.

5/ In equation (4), price ratio is lagged.

6/ A time trend variable is used instead of production.

omitted any variable whose sign differed from that of the "economic" expectation. Because quantities of commercial imports and domestic food production in Ivory Coast, Lesotho, Nigeria, and Togo correlated positively, we used a time trend as a proxy for growth in consumer preference for imported food. Wheat and rice, in that order, are the main imported food commodities, and they are becoming an increasingly large part of the African diet. The uncertainty surrounding decisionmakers' behavior in any 1 year made it necessary to try different specifications of lagged and current values of the variables. We used statistical goodness-of-fit as the criterion for selecting variables.

FACTORS AFFECTING FOOD IMPORTS

By computing statistical estimations of individual conditions that affect Africa's food import behavior, we isolated those which would have the greatest influence. Total import capacities were also examined on a country-by-country basis. Throughout our analysis, we looked for patterns among low-income, middle-income, and oil-exporting nations. The results follow.

Statistical results for total import capacity shown in equation (3) support our hypothesis that financial variables have a significant effect on food-import capacity (table 5). 3/ Import elasticities relative to changes in credit ranged from 0.32 in Nigeria to 1.29 in Liberia. This means that a 1-percent increase in credit generated a 0.32-percent increase in total import value in Nigeria, an oil-exporting country, but a 1.29-percent increase in Liberia, a low-income country. The elasticities were significant at the 90-percent level of confidence in all the study countries. The average import response to credit for all countries in the region was 0.58, higher, on average, for low-income countries than for middle-income and oil-exporting countries. The average import response to variations in export earnings was 0.67, lower than import response to credit. They ranged from 0.01 in Egypt to 1.4 in Kenya. Export earnings elasticities were significant at the 90-percent level for all countries except Ethiopia, Sudan, Cameroon, Zaire, and Egypt. This means that we have a 90-percent probability of being correct when we say that export earnings are a factor influencing total import values in these countries.

Statistical results for the food-import equation (equation (4)) are mixed (table 5). 4/ Import capacity, which represents the effect of a country's financial situation, was the variable most consistently significant with the level of commercial food imports. It was significant in 17 out of 25 countries. For all countries, the average elasticity of food imports to import capacity equaled 0.65, ranging from 0.10 in both Somalia and Sudan to 1.54 in Tanzania. This means that a 1-percent increase in export earnings generated a 0.10-percent increase in total import value in Somalia and Sudan and a 1.54-percent increase in total import value in Tanzania. Both foreign exchange availability and variations in food production directly affect food imports. However, production was statistically significant in 13 countries. The effect of world food prices on food-import quantities varied by country and was significant in 10 countries. Food-import elasticities with respect to food aid were quite small. They were significant at the 90-percent level for only four countries; their signs varied from positive to negative depending upon the country.

3/ Refer to columns 1 and 2 of table 5.

4/ Refer to columns 3-6 of table 5.

To interpret differences in statistical results among countries, we looked at the historical pattern of all variables that determined both overall imports and food imports. We then reviewed them in conjunction with the estimated coefficients of our model.

Credit's Effect on Import Capacity

According to the estimated results, credit had both a positive and a significant effect on overall imports for all countries. Among the study countries, the low-income group had the sharpest decline in credit growth, dropping from a 21-percent growth rate in 1966-80 to a 4-percent rate in 1981-84. With an average elasticity of 0.67, low-income countries showed the highest import response to any credit change. This means that a 1-percent increase in credit generated a 0.67-percent increase in total import value. That statistic implies that if their current credit trend continues, a larger reduction in imports should be expected. The decline in credit growth was less dramatic in the other study countries. Credit growth rates in middle-income countries fell from 22 percent in 1966-80 to 16 percent in 1981-84; in oil-exporting countries, they declined from 23 percent to 10 percent over the same period. These two groups had a lower import response than the low-income countries: 0.52 percent for middle-income countries and 0.51 percent for the oil exporters. Lower import elasticities mean that a trend of declining credit will result in import decline but at a slower rate than among low-income countries.

The future availability of credit is more uncertain than ever. Despite growing endorsement of adjustment programs, which are preconditions to obtaining credit from the International Monetary Fund (IMF), African countries now face difficulties in restoring borrowing to earlier levels. Many lenders are downgrading the credit ratings of African countries not only because of their heavy debt service loads but also because of concern over the efficient use of credit. The flow of external financing declined sharply among all African countries since 1981. A 1986 IMF report details recent developments and financing trends in developing countries and focuses on structural changes in financial instruments designed to improve risk management (9). Important features of capital market activity in 1984-85, the report notes, were an increase in net bank lending to industrial countries and a decrease in lending to developing countries.

Bhatia and Tahari contend that the internal adjustments alone may be insufficient to improve the creditworthiness of the African countries and to restore their medium-term economic growth in light of the current size of debt repayments (1). Consequently, contracting new loans at concessional terms and spreading debt service payments over a longer period are among the measures they recommend to help the region. Nigeria is the only country to force the issue. In 1986, Nigeria limited debt repayment to what the Government believed its economy could bear. Even if all study countries could afford to take this position, the action does not solve the problem.

The consensus among international institutions familiar with the crisis is that unless aid increases, reform will fail, debt service charges could rise at a faster rate than output, and an increasing share of foreign exchange will have to be devoted to debt service. According to the World Bank, real per capita imports should grow, at the minimum, to the level of 1980-82 to finance growth-oriented adjustments. That means that \$11 billion is needed annually for the next 5 years. Commitment in 1986 was about \$8.5 billion (10).

In May 1986, at a special session of the United Nations General Assembly on economic problems of Africa, African countries requested \$45.6 billion in additional aid and \$35-\$55 billion in new debt relief for 1986-90. (Total aid to Africa in 1985 was about \$7 billion.) So far, donor nations have not committed themselves to any specific targets. However, if the drop in net foreign exchange flow continues, further decline in the region's economic growth is expected along with a sizable cutback in imports. Nonfood imports are expected to suffer the most because they have higher elasticities; that is, they are more directly influenced by the availability of foreign exchange.

Export Earnings' Effect on Import Capacity

How did changes in export earnings translate to a country's import capacity during the study period? Increases in export earnings led to the highest response in imports in Kenya and to the lowest response in imports in Egypt: 1.41 and 0.01, respectively. For all countries except Ethiopia, Sudan, Cameroon, Zaire, and Egypt, elasticities for export earnings were significant at the 90-percent level. Cameroon and Zaire are among the few countries in the region that enjoyed positive merchandise trade balances during most of the study period (table 6). However, both countries used from one-third to one-half of their export earnings during the 1980's to import services. This heavy capital outflow could explain their low responsiveness of commodity imports relative to export earnings changes. In contrast, Egypt and Sudan rely for revenue on income transfers from workers abroad. Because Egypt's foreign earnings are based chiefly on Suez Canal fees and tourism, increases in foreign earnings from exports affected merchandise import levels minimally. In Ethiopia, export earnings accounted for only about one-half to three-fifths of imports since 1980. Ethiopia has a traditional pattern of using credit and grants to finance its import bill. This dynamic could have moderated the effect that variability in export earnings had on imports.

The large and positive effect that export earnings had on import capacity in Kenya, Madagascar, Morocco, and Nigeria, whose elasticities all exceeded 1, implies that a decline in terms of trade along with high annual variations in export prices and export volume severely restricted their ability to import. The trend data indicate that commodity price instability grew substantially over the last decade. A study by Chu and Morrison showed that an overall index of commodity price variability between 1957-71 and 1972-82 increased more than threefold when measured from both long- and medium-term trends (2). Individual primary commodities showed a similar pattern over the 25-year period from 1957-82: oil prices led in volatility, followed by beverage prices.

The combination of a long-term downward trend in real prices, growing price instability, and production variability creates an unstable economic environment. Commodity price instability is one of the major factors contributing to unstable export earnings and largely explains the region's current financial difficulties and imbalances in current accounts. Nine of the study countries had coefficients of variation in export earnings which exceeded 30 percent, while only four countries had coefficients which were smaller than 20 percent (table 6). Those having the highest coefficients, meaning the greatest export earnings swings, were Lesotho (56 percent), Nigeria (53 percent), and Niger (48 percent).

The problem with such wide swings in export earnings is that they limit practical means of achieving stability since cash reserves are low and credit is not always available. A country's immediate reaction to a drop in export earnings is to cut back on commodity imports. Since most countries ban imports of luxury items, the brunt of the cuts falls on essential goods such as food and raw materials. Restricted essential goods threaten public nutrition in poor countries and imperil economic growth in practically all of the countries that rely on imported inputs.

Table 6--Trade balances and export indicators

Country	1970	1976	1983	Average growth in export value, 1966-68 to 1982-84	Coefficient of variation of export earnings
Low-income:					
Benin	(8)	(123)	(175)	11.1	17.8
Ethiopia	(22)	(59)	(337)	8.4	13.6
Gambia	2	(16)	(5)	10.3	33.7
Kenya	(86)	(64)	(279)	8.9	23.3
Liberia	64	98	61	6.5	17.6
Madagascar	3	27	(83)	6.8	22.3
Mali	(5)	(17)	(80)	13.6	22.8
Niger	(8)	(27)	(102)	14.5	47.9
Sierra Leone	(5)	(36)	(79)	2.1	24.3
Somalia	(9)	(72)	(272)	7.7	39.8
Sudan	(16)	(37)	(189)	4.8	22.8
Tanzania	(38)	(65)	(430)	3.0	23.4
Togo	1	(22)	(19)	9.9	39.6
Zaire	216	(269)	410	7.0	20.9
Middle-income:					
Lesotho	(26)	(171)	(472)	10.1	56.5
Morocco	(137)	(1,061)	(1,243)	9.8	20.2
Senegal	(45)	(146)	(311)	8.6	27.4
Zambia	455	361	271	2.1	25.2
Zimbabwe	(8)	271	84	9.4	17.6
Oil-exporting:					
Algeria	(68)	528	3,226	17.0	31.9
Cameroon	28	29	141	12.9	30.2
Egypt	(267)	(2,233)	(6,582)	11.5	24.8
Ivory Coast	122	574	585	11.6	27.8
Nigeria	309	2,644	(905)	18.0	52.7
Tunisia	(105)	(644)	(1,177)	15.0	31.0
Total	346	(529)	(7,961)		

() denotes a negative number.

Source: (8).

Countries with a large inflow of concessional aid such as Egypt are in a somewhat better position to deal with ebbs and flows in export earnings. Egypt's estimated import response to variations in export earnings was insignificant at 0.01. However, Egypt currently suffers a sharp downturn in nonexport sources of foreign currency earnings. User fees from the Suez canal, income from tourism, and remittances from workers abroad generate more than half the nation's annual foreign exchange earnings. Egyptian officials expect the return of about 400,000 workers, or 10 to 15 percent of the total, employed abroad because of the economic squeeze in oil-producing countries in 1986. A 25- to 40-percent reduction in the volume of remittances combined with a tourism slowdown and declining oil prices mean that Egypt will face serious economic problems. Even though the import elasticity for Egypt is low for export earnings, loss of these other sources of foreign exchange is likely to curtail imports significantly and make imports more dependent on commodity exports.

We expected oil-producing countries with relatively stronger economies such as Algeria, Tunisia, and Nigeria to be less vulnerable to fluctuations in export earnings than the low-income countries, but research shows this not to be the case. A report by the IMF indicated that a decline in the average price of oil from \$27 to \$15 a barrel will cause the major oil-producing countries to lose about \$28 billion in oil revenue in 1986 (4).

Among study countries, Nigeria will face the greatest loss, equal to 42 percent of its 1985 current account receipts. Algeria will be the second largest loser, with a 29-percent dropoff in receipts. The declines are equal to 58.8 percent of Nigeria's 1985 imports and 42.2 percent of Algeria's. A sustained period of depressed prices, however, could certainly cut into global conservation efforts and lower investment and production levels of Great Britain and the United States, which are higher cost producers. As growth in industrial countries continues, oil prices are expected to recover some stability.

Under current conditions, instability and declining terms of trade could severely affect the study countries' ability to import and their subsequent economic performance. Unless some offsetting measure is found, such as providing compensatory financing when export earnings drop below a specified level, more difficult financial situations should be expected, especially for the low-income countries. 5/

Food Versus Nonfood Import Choices

Looking at how a country's import capacity affects its food or nonfood commodity import choices, we found mixed statistical results (see table 5). 6/ A country's import capacity, represented by the total value of imports, was the variable most consistently significant in explaining food-import levels. This finding implies that, for most countries, export earnings and credit are the important determinants of food imports.

Responsiveness of food imports to import capacity ranged from high values greater than 1 for Kenya, Liberia, Tanzania, Morocco, and Tunisia to low values of 0.1 for both Somalia and Sudan. In three countries, the size of the food-import elasticity compared with foreign exchange was significantly

5/ The IMF has discussed financing during years of export shortfall and repayment when export earnings rise above trend.

6/ Refer to columns 3-6 of table 5.

larger than 1. Five countries had significant elasticities ranging from 0.5 to 1, while nine countries had elasticities equaling less than 0.5. In eight countries (five low-income, two middle-income, and one oil-exporting), food imports showed no significant response to import capacity changes. This means that a 1-percent increase in import capacity generated increases in food imports ranging from 0.5 percent to 1 percent in five countries, increases of less than 0.5 percent in nine countries, and negligible increases in the remaining eight countries.

In the low-income countries, with their high import dependency, the insignificant or low sensitivity of import capacity to food imports suggests that food imports are critical in these countries. And, once the food gap is filled, remaining foreign exchange goes to import nonfood commodities. In the middle-income countries of Zambia and Zimbabwe, we found the total value of food imports' share of total imports to be low, equaling less than 10 percent in 1982-83. This factor could explain why the variations in import capacity had no significant effect on purchases of food imports. Among oil-producing countries, only Ivory Coast showed no significant food-import response to financial changes. It allocated 19 percent of the country's total import budget to food imports in 1982-83, a relatively large proportion compared with other study countries. In the case of Ivory Coast, government policy could have been a key factor influencing the food-import pattern.

Nonfood Sector Suffers Most

Overall, the pressure of high population growth, rapid growth in rural-urban migration, and consumer food subsidy policies that encourage food consumption raised the region's dependency on food imports. The financial consequences of this trend, which shows no signs of slowing, was growth in the value of food imports, though in varying degrees, in almost all countries (table 7). This trend, expressed as a ratio, however, underestimates how much pressure food imports exert on foreign exchange availability because foreign foods had already been scaled back when foreign exchange shortages developed in the region. With food imports assuming a greater share of total imports and foreign exchange availability declining, the nonfood sector suffers the most.

Many researchers have indicated the possibility of food imports displacing other capital goods and raw materials. In his study of import demand in Egypt, Scobie showed that a decline in the volume of imports after a fall in foreign currency earnings affected purchases of industrial raw materials and capital goods the most (5). He also showed that dampened food import demand arising from food subsidy policies caused fluctuating output and investment in the industrial sector.

Our estimated results showed that the average size of the food-import elasticity with respect to foreign exchange availability registered 0.65 in the low-income countries, 0.57 in the middle-income countries, and 0.66 in the oil-exporting countries. This inelastic food-import sensitivity to foreign exchange availability in most countries supports Scobie's finding that a drop in foreign exchange earnings produces a larger effect on nonfood than food imports. In poorer countries, where a larger proportion of the spendable foreign currency went to food imports, the overall low level of purchasing power led to severe food shortages and famine in the early 1980's. The lending decline and poor cash reserves in most countries imply greater vulnerability to the import squeeze.

Table 7--Food import characteristics

Country	Food imports as a share of--			
	Exports		Total imports	
	1983-84	High point 1/	1983-84	High point 1/
<u>Percent</u>				
Low-income:				
Benin	NA	NA	NA	NA
Ethiopia	37.1	43.2	16.6	18.9
Gambia	40.0	61.4	36.7	43.5
Kenya	15.4	19.5	11.8	17.1
Liberia	22.7	23.0	27.4	30.6
Madagascar	21.6	38.9	18.7	28.2
Mali	44.0	158.8	31.8	78.6
Niger	NA	17.4	NA	12.3
Sierra Leone 2/	48.8	71.8	39.2	39.2
Somalia	152.6	212.3	26.5	45.9
Sudan	51.0	57.2	41.1	49.2
Tanzania	28.5	39.1	14.8	23.3
Togo	25.7	26.1	24.9	26.3
Zaire	8.1	20.3	11.0	16.0
Middle-income:				
Lesotho	NA	NA	NA	NA
Morocco	34.2	48.4	21.1	33.1
Senegal	45.4	61.6	30.2	42.2
Zambia	6.9	10.2	8.3	12.3
Zimbabwe	2.9	3.4	3.3	4.1
Oil-exporting:				
Algeria	16.3	28.2	21.9	23.3
Cameroon	8.6	10.6	7.1	12.8
Egypt	94.1	97.9	34.6	36.7
Ivory Coast	14.7	18.5	25.1	24.1
Nigeria	14.3	18.1	15.2	20.2
Tunisia	29.5	46.6	17.3	28.4

NA = Not available.

1/ High point of the period 1966-84.

2/ No available data for 1984.

Source: (8).

Domestic Production's Effect on Food Imports

The ability to provide adequate food becomes a greater concern to most African governments as financial difficulties deepen (table 8). As the results of our import demand estimations show, a country's financial situation was the most significant factor influencing its commercial food imports. Another important factor fueling import growth was the failure of the domestic food sector to keep pace with demand growth. With a few exceptions, declining per capita food production was common in low- and middle-income countries. Drought and highly variable rainfall stunted agricultural production. Government policies and inefficient administrative systems often compounded the weather and resource problems, leading to slowed agricultural growth (6).

As table 8 shows, negative elasticities indicate that governments are importing food commercially to make up for production shortfalls. Production was a statistically significant variable in 13 of 25 countries, indicating that production increases and declines are directly transmitted to food imports. The average size of the elasticity was greatest in low-income countries (2.4). Oil-exporters were next (1.8), followed by middle-income countries (1.5).

Self-Sufficiency Varies

Self-sufficiency varied by group (table 9). For 1982-84, low-income countries showed a higher level of self-sufficiency (0.84 percent) than the other two groups, meaning that food imports accounted for a relatively smaller share of their domestic production. Consequently, imports should change more proportionally to compensate for production changes. This dynamic could explain the larger size of import response in the low-income group. In middle-income and oil-exporting countries, self-sufficiency ratios were historically lower than in the low-income countries during 1982-84. The ratios for the two were 0.56 and 0.62, respectively, corresponding to their relatively lower average food import response to production variations.

In the low-income group, food production variations significantly affected commercial imports in only 5 of 14 countries. The slow, late response to production shortfall in these countries was part of the reason that famine afflicted most of Sub-Saharan Africa between 1981-83.

In 7 of the 11 middle-income and oil-exporting countries, variations in food production significantly changed importing levels. The exceptions, Lesotho, Ivory Coast, Nigeria, and Egypt, showed positive correlations between production and imports, suggesting that these countries did not use imports to stabilize food availability. Lesotho's economy depends heavily on South Africa's economy. Any South African policy changes are therefore expected to outweigh Lesotho's own domestic trade and nontrade policies. Statistics for Ivory Coast and Nigeria show that production varied less than the average for the study countries, which could be the reason that production did not influence the decision to import. Food production in Egypt, which had the lowest variation in this group, did not significantly affect import levels.

In general, government policies aimed at improving diets or the emergence of strong consumer preferences for imported food (especially among oil-exporting countries) appear to be driving imports. Only in Nigeria was time trend, used as a proxy for changes in taste and preference, significant.

Table 8--Growth in gross domestic product. (GDP), debt service, and imports, 1966-84

Country	Growth in real GDP			Growth in debt service			Growth in merchandise imports		
	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84	1966-80:1981-82:1982-83:1983-84
									Percent per year
Low-income:									
Benin 1/	6.8	(13.9)	(0.1)	20.5	(13.1)	66.4	57.6	15.9	8.0 (35.1) (21.5)
Ethiopia	4.4	1.5	(1.1)	6.1	27.3	24.6	23.9	11.3	9.6 (14.8)
Gambia 1/	6.3	(5.4)	(1.1)	(31.9)	17.3	328.0	(37.4)	9.0	14.1 (23.1) (7.7) (12.8)
Kenya	5.6	(15.7)	(16.3)	(6.9)	19.0	13.4	(6.2)	14.8	15.6 (20.6) (19.4) (11.0)
Liberia	1.8	(6.2)	(27.3)	(5.3)	13.1	24.9	(7.1)	35.3	11.4 (10.2) (1.8) (13.4)
Madagascar	2.5	(23.7)	(18.0)	(23.8)	16.3	106.8	8.4	35.4	11.5 (11.6) (13.7) (13.5)
Mali	5.1	(1.5)	(17.3)	(12.9)	9.3	(13.8)	55.6	38.1	16.9 (13.2) 5.1 4.4
Niger	NA	(18.0)	(16.0)	(26.8)	24.3	76.2	(34.4)	(8.8)	22.2 (19.5) (11.4) (28.0)
Sierra Leone	3	(10.5)	(22.5)	(31.3)	15.3	(74.9)	(9.4)	67.0	11.4 (4.5) (36.9) (27.7)
Somalia	4.4	(35.1)	(29.1)	(19.3)	NA	(59.2)	29.7	7.6	17.6 (27.2) (23.2) 28.6
Sudan	3.8	(39.0)	(31.2)	(0.9)	14.4	(20.7)	(24.3)	23.6	10.9 (54.1) (6.3) (21.0)
Tanzania	3.5	(13.7)	(17.1)	(25.3)	17.3	(14.4)	3.5	9.0	12.7 9.3 (29.3) (2.5)
Togo 1/	5.8	(20.3)	(18.3)	(13.5)	30.2	(19.7)	16.2	49.3	19.1 (9.1) (26.5) (4.9)
Zaire	(11.7)	(26.1)	(54.9)	(63.4)	22.3	(28.8)	(6.8)	177.8	11.5 (12.5) (1.4) 4.6
Middle-income:									
Lesotho	5.5	(19.9)	(3.2)	(25.5)	23.6	111.4	128.0	(.5)	19.1 (4.6) 122.8 (10.0)
Morocco	7.0	(9.3)	(14.8)	(17.5)	24.9	6.2	(16.7)	6.1	15.9 (.7) (13.5) 8.1
Senegal	3.2	(4.7)	(11.5)	(16.3)	29.0	(48.3)	22.4	63.2	13.4 (4.0) (9.2) (8.6)
Zambia	1.0	(9.1)	(27.2)	(31.1)	23.0	(40.3)	(30.0)	(8.1)	5.3 (5.7) (29.2) (13.9)
Zimbabwe 1/2/	4.1	(7.0)	(23.7)	(18.0)	14.0	101.9	194.5	(36.5)	64.0 (4.0) (27.3) (7.5)
Oil-exporting:									
Algeria	9.6	(2.0)	(.1)	.4	43.9	11.6	16.1	.7	20.9 (2.0) (3.8) (1.1)
Cameroon 1/	7.0	(11.2)	(9.6)	(7.1)	31.6	30.9	(24.4)	8.8	16.6 (10.8) (.2) (10.0)
Egypt	3.5	5.6	9.0	9.0	17.7	(.3)	5.0	17.7	16.2 3.4 13.2 4.8
Ivory Coast	7.5	(20.6)	(17.5)	(15.3)	27.3	27.3	(16.1)	39.0	17.7 (10.7) (18.5) (12.8)
Nigeria	8.5	(10.8)	(9.1)	7.8	16.6	57.8	42.9	71.4	26.0 (21.6) (23.0) (21.5)
Tunisia	9.5	(16.1)	(9.0)	(8.0)	16.2	(6.2)	23.2	4.7	19.0 (8.3) (7.3) 8.4

() denotes a negative number.

NA = Not available.

1/ Real GDP growth: Benin, 1970-80; Cameroon, 1969-80; Gambia, 1970-80; Togo, 1970-80; Zimbabwe, 1970-80.
 2/ Outstanding debt growth: Zimbabwe, 1973-80.

Source: (8)

Table 9--Self-sufficiency indicators

Country	:		:		:	
	Growth rate of		Coefficient		Self-sufficiency ratio	
	cereal production	of variation	1966-68	1982-84	1966-68	1982-84
	Total	Per capita	of production			
		Percent per year		Percent		
Low-income:						
Benin	:	2.16	(0.64)	12.7	0.94	0.84
Ethiopia	:	1.46	(.54)	11.9	.99	.95
Gambia	:	.89	(2.36)	21.0	.84	.57
Kenya	:	1.17	(2.62)	14.3	1.03	.83
Liberia	:	3.76	.69	5.7	.69	.66
Madagascar	:	.87	(1.61)	3.0	1.46	1.28
Mali	:	(.50)	(2.66)	13.1	1.08	.90
Niger	:	1.47	(1.55)	18.8	1.01	.93
Sierra Leone	:	.91	(1.33)	7.9	.87	.88
Somalia	:	3.54	(.99)	14.6	.87	.52
Sudan	:	3.55	.27	25.5	.83	.90
Tanzania	:	5.53	2.34	14.4	1.00	.90
Togo	:	.42	(2.66)	12.6	.96	.79
Zaire	:	5.38	2.64	6.0	.75	.85
Middle-income:						
Lesotho	:	(2.74)	(5.05)	25.0	.90	.45
Morocco	:	(.61)	(3.32)	28.4	.56	.55
Senegal	:	.83	(2.16)	24.3	.81	.59
Zambia	:	.83	(2.30)	14.4	1.04	.83
Zimbabwe	:	1.43	(1.85)	27.2	1.27	.83
Oil-exporting:						
Algeria	:	1.72	(1.31)	26.8	.69	.28
Cameroon	:	1.99	(.41)	14.3	.95	.85
Egypt	:	1.65	(.77)	3.3	.79	.55
Ivory Coast	:	3.48	(.80)	7.2	.89	.65
Nigeria	:	2.09	(.74)	9.7	.99	.84
Tunisia	:	6.62	4.17	21.9	.56	.55

() denotes a negative number.

Source: (8).

World Price's Effect on Food Imports

The effect of real world cereal prices on the volume of food imports varied by country and was found to be statistically significant in 10 countries. However, these results are somewhat questionable because it is not known how closely world prices match prices paid by the study countries. Transportation costs in many countries, particularly landlocked ones, have evidently pushed up import unit prices significantly. Suppliers often use specific commodity credits and other price-cutting measures to drive transactions, causing effective prices to differ greatly from world prices.

Certain reservations apply to countries with large import price elasticities (elasticities greater than 1). Benin, Ivory Coast, Niger, Togo, Zambia, and Zimbabwe all fall in this category. Logic would lead one to expect a lower price elasticity (close to 1) because these countries have virtually no domestic substitutes for imports and allocate nearly a fixed portion of foreign exchange to food imports. Yet, among North African countries in particular, world price had no significant effect on imports. (World price had an insignificant effect in Algeria and Egypt.)

The reason may be a combination of strong government consumer protectionist policy (leading to inelastic demand) and competition among suppliers (leading to a price distortion away from world price). For example, a recent USDA study of the conduct of wheat marketing in North Africa showed that nonprice competition among principal suppliers makes the effective price significantly lower than the world price (3). The study argues that the nonprice competition is always in the form of credit, which varies by supplier within a given marketing year. This market structure could explain the insignificant effect that world price has on food imports in these countries.

Food Aid's Effect on Food Imports

Persistent food deficits and the deteriorating financial position of African countries were major factors contributing to the rise in food aid. However, our research showed that it is difficult to prove that food aid significantly influenced the quantity of imports in most of the study countries.

Demand estimates of food aid's relationship to food imports showed elasticities that were significant for only four countries. Moreover, signs varied from positive to negative depending upon country, which indicates contrary effects. Positive and significant relationships between food aid and commercial food imports resulted for Liberia, Mali, and Senegal, implying that food aid reduced a foreign exchange constraint. The displacement effect of food aid on commercial imports was found to be significant only in Sudan, the second largest recipient of food aid in Africa during the 1980's. The governments of low-income recipient countries typically do not know the exact quantities of food aid they will receive in any given year. The decision on how to allocate food aid is in the hands of donor countries, making food aid an exogenous component of food availability.

Asia has received most of the world's food aid. In the early 1970's, however, Africa's share began to grow and, by 1980, amounted to more than half the food aid of all developing countries (table 10). The trend of low, and, in some cases, negative production growth among study countries suggests that both commercial imports and food aid were used to compensate for domestic food production deficiencies. Between 1966 and 1985, food aid to the region grew

Table 10--Commercial food import and food aid relationships

Country	Growth in--		Food aid as a share of	
	Commercial imports:	Food aid 1/	total food consumed 2/	
:				
:				
Low-income:				
Benin	10.3	--		1.2
Ethiopia	7.4	18.2		5.3
Gambia 3/	7.8	11.9		15.3
Kenya	11.4	7.5		7.1
Liberia	.8	--		22.6
Madagascar	3.7	--		5.9
Mali 4/	15.6	9.6		8.1
Niger 5/	12.5	6.3		1.9
Sierra Leone	1.7	10.2		6.0
Somalia 4/	9.7	21.8		22.6
Sudan	3.4	12.1		10.7
Tanzania	6.5	18.1		7.8
Togo	12.6	--		--
Zaire	5.6	0		9.2
:				
Middle-income:				
Lesotho 6/	12.5	8.6		13.7
Morocco	12.6	(2.1)		6.6
Senegal	2.5	7.2		8.7
Zambia 7/	4.8	17.3		6.8
Zimbabwe	1.7	--		3.0
:				
Oil-exporting:				
Algeria	11.3	NA		NA
Cameroon	7.9	--		.6
Egypt 3/	5.1	25.0		21.2
Ivory Coast	9.1	NA		NA
Nigeria	16.7	NA		NA
Tunisia	13.7	(2.5)		8.3
:				

() denotes a negative number.

NA = Not applicable.

-- denotes a recent or inconsistent recipient of food aid.

1/ Annual percentage based on the period 1966-68 through 1982-84.

2/ Percentage based on the period 1983-85.

3/ Food aid growth is calculated from 1971-84.

4/ Food aid growth is calculated from 1970-84.

5/ Food aid growth is calculated from 1969-84.

6/ Food aid growth is calculated from 1972-84.

7/ Food aid growth is calculated from 1975-84.

Source: (8).

at an annual rate of over 10 percent, from an average of 480,000 tons to almost 5 million tons.

However, the high rate of growth did not have a uniform pattern. Of all study countries, only Ivory Coast, Nigeria, and Algeria bought commercially all food imports. Countries such as Egypt and, to a lesser extent, Morocco (which has been a food aid recipient for more than a decade) have had a relatively predictable inflow of food aid, but in other countries food aid did not have a stable trend and is used to combat emergencies. Most often, food aid was provided to alleviate the ravages of drought or large domestic production shortfalls. Emergency food aid thus has a limited effect on commercial imports because concessional food and commercial imports tend to increase simultaneously. And, in many cases, quantities are not great enough to prevent per capita consumption from declining.

In Sub-Saharan African countries during the 1960's, food aid amounted to a relatively small share of total food consumed compared with domestically produced food. It typically accounted for less than 2 percent. However, in the 1970's and 1980's, food aid's share grew rapidly, reaching 85 percent in Somalia (1981). Somalia suffered drought, which aggravated the ongoing food shortages induced by warfare and a heavy influx of refugees.

In North Africa, Egypt is by far the largest recipient of food aid. The Camp David peace initiative in 1974 included an agreement for large shipments of food aid: 2.5 million tons annually. Since then, Egypt has become the largest recipient of food aid in the world. Egypt's food aid, as a share of total imports, peaked at 50 percent, or 3 million tons, in 1978. Since then, Egypt's food imports have increased substantially, reaching 7 million tons in 1985, and its food aid declined to about 2 million tons in 1985. Morocco and Tunisia have benefited from food aid shipments, partly because of donor countries' foreign policy and strategic objectives. The size of food aid disbursements and their share of total imports varied significantly year to year, however. In Morocco, food aid accounted for 97 percent of total food imports in 1972. After 1972, commercial imports rose and the share of food aid declined to about 12 percent during 1980-84. The same pattern holds true for Tunisia, where a high level of food aid prevailed in the early 1970's, followed by an increase in commercial imports and a decline in both the share and absolute level of food aid imports.

The direct effect of food aid on commercial imports was positive in Egypt and Morocco, and negative in Tunisia. The large amounts of food aid allocated to Egypt in 1974 were followed by an important change in Egyptian trade policy called the "open door" policy. This change led to a major upward shift in Egypt's overall imports and in food imports in particular. Whether the policy change would have been carried out in the absence of food aid promises is unknown. Given the financial constraints, it is unlikely that the country would have been able to expand its commercial imports as significantly as it did. As table 7 shows, in 1982-83, food import values in Egypt amounted to 37 percent of total import values and to 81 percent of export earning values.

However, it is difficult to identify the causal relationship between the country's overall policy change, its continuous policy of heavily subsidizing consumer foods, increases in food aid, and increases in commercial imports with the statistical technique used. The stable pattern of food aid imports, with little annual variation, also could explain why food aid did not significantly influence the variations in commercial imports.

Food subsidy policies in Morocco and Tunisia are similar to those in Egypt. Heavier commercial importing, it would appear, is more closely linked to changes in food production and to financial constraints than to the level of food aid. In these countries, the effect of food aid displacing commercial imports could be shown to be stronger on the basis of individual commodities such as wheat or rice than what was captured by the estimated total demand for cereals. The difference arises from the larger relative proportions.

FOOD IMPORT PROJECTIONS

Numerous uncertainties over the international economic situation loom, all of which may substantially affect the region's financial capacities. Crucial variables are the likely changes in world interest rates, the trend in oil and other commodity prices, the ability of industrialized countries to relax their protectionist policies, and the speed with which study countries adopt structural policy changes.

Because a whole set of future uncertainties exist, we developed specific scenarios to test and evaluate what effects potential changes in financial conditions would have on the imports of the study countries. To do this, we simulated the effects of several alternative financial situations over a 10-year period (table 11). The scenarios are:

- o No change in historic trend (scenario 1 or base projection);
- o An increase in export earnings of 5 and 10 percent annually with no change in credit (scenario 2);
- o An increase in credit of 5 and 10 percent annually with no change in real export earnings (scenario 3); and
- o A decline in credit of 5 percent with no change in real export earnings (scenario 4).

We assumed that all other variables such as production, world price, and food aid continued at trend levels.

Under scenarios 2 and 3, we used a high growth rate (10 percent) for export earnings and credit for those countries with relatively strong economies (Zimbabwe, Cameroon, Ivory Coast, Nigeria, Algeria, Egypt, Morocco, and Tunisia). We used a lower growth rate (5 percent) for countries with relatively weak economies (Ethiopia, Kenya, Lesotho, Mali, Niger, Senegal, Somalia, Sudan, Zambia, Madagascar, Zaire, Benin, Gambia, Liberia, Sierra Leone, Tanzania, and Togo).

Scenario 1 (the base projection) shows that by 1994 the total commercial food imports of low-income countries are projected to decrease by 4 percent and total import capacity to decrease by 5 percent. The food-import decline will be quite severe in countries like Benin, Niger, and Tanzania in which anticipated import capacities will equal only 50, 53, and 36 percent of their 1984 levels, respectively. The largest food-import increase will take place in drought-ravaged Ethiopia and Mali, whose economies deteriorated during the early 1980's. These countries are in great need of additional food because of the historical nutritional problems. Food imports by other low-income countries will either increase slightly (a maximum of 10 percent) or decline

Table 11--Quantity and value of food imports in 1994: Alternative scenarios

Country	Base		Scenario		Scenario		Scenario	
	projection		2		3		4	
	Q	V	Q	V	Q	V	Q	V
:								
Index (1984 = 100)								
Low-income:								
Benin	50	23	129	145	134	152	78	66
Ethiopia	198	225	101	101	143	155	72	64
Gambia	82	52	110	126	108	122	93	82
Kenya	85	90	257	202	140	126	69	79
Liberia	88	90	171	158	211	191	42	52
Madagascar	108	109	335	353	124	126	81	79
Mali	160	229	118	139	126	156	83	64
Niger	53	35	140	156	116	122	87	82
Sierra Leone	88	72	127	162	131	172	82	58
Somalia	92	23	104	138	103	132	98	76
Sudan	106	156	102	117	102	123	98	81
Tanzania	36	59	159	138	145	129	65	77
Togo	82	50	110	129	108	121	94	83
Zaire	110	115	127	140	114	121	89	83
Group average	96	95	149	157	129	139	81	73
:								
Middle-income:								
Lesotho	122	179	109	132	111	139	92	72
Morocco	76	80	189	172	186	170	71	77
Senegal	113	163	108	137	106	129	95	77
Zambia	110	117	110	117	111	119	90	84
Zimbabwe	181	245	122	138	141	173	87	76
Group average	120	157	128	139	131	146	87	77
:								
Oil-exporting:								
Algeria	72	74	123	134	140	158	86	79
Cameroon	121	147	107	114	131	170	90	77
Egypt	180	274	105	111	154	218	85	68
Ivory Coast	131	224	142	266	110	142	96	84
Nigeria	180	278	133	174	117	138	93	85
Tunisia	80	84	269	236	200	180	68	74
Group average	127	180	147	173	142	168	86	78
:								

Notes

Q denotes quantity of food imports in 1994.

V denotes value of food imports in 1994.

Scenario 2 assumes a 5- or 10-percent growth in export earnings and no change in credit.

Scenario 3 assumes a 5- or 10-percent growth in credit and no change in export earnings.

Scenario 4 assumes a 5-percent decline in credit and no change in export earnings.

(a maximum of 18 percent). Assuming an annual population growth of 3 percent, the total population in 1994 will be about 35 percent higher than in 1984, creating a significant decline in per capita food imports for many of the low-income countries. If current food production patterns persist, food availability, on a per capita basis, will decline substantially. 7/

In the middle-income countries, projected average growth in total food imports is 20 percent. Total import capacity is slated to rise by 57 percent. On a per capita basis, food imports barely balance population growth. However, the major problem facing these countries is the rapid decline in domestic food production, ranging from 1.9 percent annually in Zimbabwe to 5 percent annually in Lesotho. Without a drastic change in historical food production patterns, per capita food availability will deteriorate rapidly, especially in a country like Zambia with only 10-percent growth in imports and 2-percent decline in per capita food production.

In the oil-exporting countries, food imports and total import capacities are projected to grow by 27 and 80 percent, respectively, by 1994. Thus, food imports will increase on a per capita basis. The trend in per capita food production showed a decline in five of the six oil-exporting countries, but the rate of decline was smaller than in the low- and middle-income countries. It ranged from -0.4 percent in Cameroon to -1.3 percent in Algeria. Among this group, the mean self-sufficiency ratio is about 60 percent, meaning that if per capita food imports increase, per capita production decreases could be covered. As a result, per capita food availability would not change much.

Scenarios 2 and 3 reflect an anticipated increase in both capacity to import and in quantities of commercial food imports as a result of increases in credit and/or export earnings. In scenario 2, export earnings were increased, while credit remained unchanged. Results indicate that import capacity and quantities of food imports in low-income countries could increase by 57 percent and 49 percent, respectively, by 1994. Middle-income countries showed slower import response to an increase in export earnings; a 28-percent increase in quantities of food imports and a 39-percent increase in import capacity by 1994. The oil exporters showed the highest import response. They are projected to reach a 73-percent increase in import capacity and a 47-percent increase in food-import quantities. Most of the grain imports in oil-exporting countries are expected to be used as feed for livestock. Higher livestock output would raise their already high per capita food consumption level, further improving and diversifying diets.

In scenario 3, we assumed conditions of credit increases but unchanged export earnings. Again, projections revealed average increases in capacity of imports and food imports to be highest in oil-exporting countries, most of which have a long history of consumer protectionist policies. Middle-income countries showed higher import response than low-income countries, both in terms of capacity to import and of level of food imports. The estimate showed a 31-percent rise for the middle-income countries versus a 29-percent increase in food imports for low-income nations. In capacity to import, middle-income countries grew 46 percent, while low-income countries grew only 39 percent.

In scenario 4, a 10-percent reduction in credit combined with no increase in export earnings will reduce low-income countries' food imports by 19 percent

7/ Per capita food production from 1966 to 1984 declined in 10 countries and stagnated in 2 countries.

and import capacity by 27 percent by 1994. A decline in food imports could have severe nutritional implications in these countries. A drop of this magnitude in food imports, unless offset by food aid, will cause severe food shortages and could lead to famine, especially in countries with low self-sufficiency ratios. Countries which have very low average nutritional levels, such as the Sahelian countries, Ethiopia, and Mozambique, remain vulnerable to famine in case of food shortages (6). Middle-income and oil-exporting countries are expected to reduce imports less than low-income countries. By 1994, food imports may be cut 13-14 percent in the middle-income and oil-exporting countries, and import capacity may decline 22-23 percent.

As our results show, changes in commercial food import levels due to financial constraints would come about more slowly than changes in total import levels. Because practically all of the study countries restrict imports of luxury items, any increase in the food import share means a cut in imports of essential raw materials. Such a raw materials shortage could severely hinder the region's economic development.

Our projections, although hypothetical, show that the magnitude of future import response to fluctuating availabilities of foreign exchange will be substantial. The recent downward trend in oil prices, if it continues, will mean further reductions in imports to the oil-exporting countries. Any decline in remittances and official transfer receipts from Middle East oil-producing countries will exert more financial pressure on Egypt, Morocco, and Sudan. In contrast, lower oil prices will benefit the foreign exchange situation of oil-importing countries as long as other commodity prices do not follow the same downward path. Increases in nonoil commodity prices relative to oil prices and lower interest rates could help cover the low prevailing commodity prices and provide opportunities for economic recovery in smaller countries.

If, however, the price of oil stabilizes or increases in the medium term, oil-importing African countries are expected to become much more vulnerable. The price prospects for nonoil commodities remain gloomy, unless occasional external factors such as drought-induced price increases raise export earnings in the short term. (An example is the 1984 world coffee price boom brought about by the Brazilian drought.) If all countries adopt the policy of expanding exports in the medium term, it is unclear whether their earnings would increase at all because of the greater competition resulting in lower prices. Plans to diversify African exports have been discussed for many years, but no concrete export strategy has been designed so far.

The creditworthiness of African nations in the foreign capital market is expected to remain fragile (4). The trend of declining outside assistance could continue because of both the region's low commodity prices and the international financial community's new sensitivity to the risks of lending to low-income countries. The policy reform conditions attached to current debt loads have not been fully carried out. As a result, tangible changes in the study countries' near-term economic performances have yet to materialize. With no drastic shift foreseen in the volume of exports, volatility and the adverse trade conditions now facing these countries are expected to persist in the medium term.

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APPENDIX--COUNTRY DATA

Appendix table 1--Benin

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----									-----\$US million-----	
1966	260	0	0	21.41	0	8	300	18.9	39.7	NA
1967	316	0	0	15.78	0	9	266	23.0	55.9	39.4
1968	289	0	0	13.82	0	9	321	33.4	53.2	40.2
1969	271	0	0	22.47	0	8	304	42.8	59.9	40.6
1970	280	0	0	15.11	0	8	278	58.0	66.0	40.5
1971	233	0	0	24.01	0	7	297	69.7	78.4	50.5
1972	266	0	0	43.06	0	8	268	67.3	94.3	45.4
1973	337	0	0	35.94	0	10	292	93.0	115.5	57.8
1974	326	0	0	11.13	0	10	339	93.1	148.8	80.8
1975	293	0	0	15.70	0	9	333	116.1	205.6	89.6
1976	270	0	0	36.92	0	8	321	85.8	208.5	111.3
1977	339	0	0	67.65	0	10	327	129.1	255.5	132.6
1978	431	0	0	42.20	0	13	368	186.2	294.7	167.1
1979	398	0	0	48.77	0	12	468	235.0	394.8	284.2
1980	340	0	0	82.58	0	10	470	161.4	313.8	309.0
1981	358	0	0	88.06	0	11	417	148.0	431.7	368.6
1982	349	0	0	116.88	0	11	464	144.4	466.0	566.5
1983	348	0	2	83.50	0	10	424	127.7	302.3	617.7
1984	472	0	14	65.30	0	0	428	170.3	237.3	581.5

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 2--Ethiopia

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	4,158	0	41	13.2	0	419	3,645	112.3	142.3	73.6
1967	3,919	10	5	34.4	0	439	3,768	101.1	125.9	112.6
1968	4,233	(45)	5	19.8	0	432	3,467	106.4	146.9	135.7
1969	4,267	35	9	21.0	0	449	3,849	119.0	130.5	156.7
1970	4,412	(20)	13	77.6	4	458	3,876	122.3	144.3	169.1
1971	4,391	0	3	64.5	0	465	4,014	126.4	158.9	204.2
1972	4,483	0	10	.3	5	462	3,935	165.6	157.8	248.2
1973	4,458	0	7	27.1	14	462	4,040	239.0	178.8	256.4
1974	3,859	0	105	63.1	12	423	4,190	266.7	249.7	313.1
1975	4,788	0	47	30.6	3	396	3,537	237.6	281.2	343.6
1976	4,423	(155)	31	70.5	1	431	4,302	278.2	337.2	430.2
1977	3,985	(145)	55	146.7	0	408	4,071	312.0	440.0	447.2
1978	5,148	85	64	158.4	0	407	3,886	324.0	544.0	510.8
1979	6,396	10	79	169.0	0	564	4,841	360.0	589.0	615.9
1980	5,559	(460)	94	322.9	2	543	5,807	474.0	754.0	701.0
1981	5,324	275	117	111.1	0	557	5,505	412.0	765.0	963.7
1982	6,649	290	189	113.8	0	533	5,384	398.4	879.9	1,038.4
1983	5,749	(340)	298	36.8	0	547	6,096	399.1	872.9	1,221.6
1984	4,790	385	449	69.3	0	523	6,129	457.3	1,045.2	1,384.2

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 3--Gambia

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
	1,000 metric tons						\$US million			
1966	69	0	0	9.8	0	13	83	16.0	18.0	NA
1967	63	0	0	11.5	0	12	69	18.0	19.0	3.8
1968	75	0	0	13.4	0	14	62	13.0	21.0	4.5
1969	74	0	0	15.9	0	15	77	16.0	20.0	4.4
1970	80	0	0	17.9	0	16	77	17.8	15.9	5.1
1971	83	0	2	14.9	0	16	81	18.3	19.1	5.5
1972	75	0	4	14.2	0	14	87	20.8	21.0	7.4
1973	73	0	8	22.3	0	15	90	19.6	25.2	8.9
1974	55	0	9	18.6	0	12	88	43.9	41.5	11.9
1975	48	(3)	3	25.3	0	12	68	57.0	47.6	12.7
1976	48	(12)	3	42.4	0	14	67	44.3	60.4	13.7
1977	42	(2)	18	29.4	0	13	80	52.9	62.0	26.7
1978	63	10	7	54.0	0	17	96	40.2	81.2	28.3
1979	43	(2)	7	38.0	0	13	94	53.8	94.8	53.7
1980	62	9	16	30.2	0	16	82	49.0	139.8	105.5
1981	79	0	21	26.0	0	19	91	84.0	123.0	140.4
1982	90	0	14	24.2	0	18	99	74.3	94.6	155.3
1983	54	0	10	35.0	0	14	121	82.8	87.3	161.7
1984	73	0	28	58.9	0	21	119	88.3	98.5	161.0

NA = Not available.

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 4--Kenya

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Food Commercial Imports	Food Exports	Non- food use	Food avail- ability	Merch- andise exports	Merch- andise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	1,972	NA	147	36.6	3	328	1,824	243.6	276.8	210.5
1967	2,192	NA	1	18.6	157	318	1,737	221.9	283.9	219.6
1968	2,186	NA	3	9.4	252	314	1,632	235.3	294.2	247.2
1969	1,992	NA	0	10.3	202	287	1,514	253.3	295.8	267.3
1970	2,106	NA	2	29.1	77	305	1,755	285.5	371.8	283.7
1971	1,894	NA	3	59.8	152	281	1,524	293.7	478.6	307.5
1972	2,273	NA	2	78.7	25	333	1,996	337.4	454.3	373.0
1973	2,169	NA	1	83.5	162	316	1,775	469.9	544.8	445.8
1974	2,151	NA	0	16.6	56	317	1,794	581.0	897.9	569.5
1975	2,457	NA	5	80.1	130	358	2,055	633.2	846.9	565.0
1976	2,781	(790)	9	48.2	111	398	1,539	745.9	809.7	764.0
1977	2,808	41	13	24.5	10	396	2,481	1,130.9	1,112.8	1,090.6
1978	2,496	488	6	89.2	15	365	2,699	956.0	1,631.8	1,382.2
1979	2,048	275	17	18.4	104	327	1,928	1,031.4	1,594.2	1,809.5
1980	2,302	(130)	122	347.9	10	386	2,246	1,261.4	2,344.8	2,216.2
1981	2,665	(371)	203	305.3	5	418	2,379	1,072.3	1,881.3	2,315.7
1982	2,799	(142)	146	132.0	6	414	2,515	933.7	1,494.6	2,428.1
1983	2,513	250	146	35.0	39	391	2,514	925.2	1,204.0	2,393.3
1984	2,020	(27)	208	234.9	0	393	2,042	1,033.9	1,336.0	2,633.4

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 5--Liberia

Year	Milled production 1/ in stocks	Change in stocks	Food			Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	97	0	0	52.3	0	28	159	150	114	128.2
1967	98	0	0	41.4	0	27	111	159	125	155.3
1968	103	0	0	52.5	0	29	121	169	108	158.8
1969	110	0	1	37.2	0	30	111	196	115	159.8
1970	127	0	1	68.0	0	36	143	214	150	155.8
1971	133	0	5	64.8	0	38	159	222	157	156.4
1972	139	0	10	42.9	0	38	148	244	179	157.3
1973	148	0	3	53.9	0	41	155	324	193	156.0
1974	163	0	3	38.9	0	42	148	400	288	158.8
1975	151	0	3	39.2	0	40	166	394	290	175.7
1976	160	0	2	44.3	0	42	155	457	359	206.3
1977	168	0	2	75.0	0	47	191	447	417	265.9
1978	158	0	1	77.7	0	45	202	486	431	348.0
1979	166	0	1	93.9	0	48	205	537	458	469.2
1980	168	0	3	96.8	0	50	216	600	478	564.2
1981	174	0	26	83.8	0	50	228	509	473	630.0
1982	170	0	43	75.3	0	52	240	453	421	632.8
1983	182	(20)	58	33.1	0	53	188	433	413	701.4
1984	187	(10)	46	59.3	0	55	222	435	319	756.7

(-) denotes negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 6--Madagascar

Year	Milled production 1/ in stocks	Food			Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
		Change in stocks	aid imports	Commercial Exports					
-----1,000 metric tons-----									
1966	1,262	0	0	27	0	NA	1,289	98	146
1967	1,316	0	0	26	0	NA	1,342	104	145
1968	1,338	0	0	78	0	NA	1,416	116	170
1969	1,332	0	0	48	0	NA	1,380	111	152
1970	1,301	0	0	99	0	NA	1,400	145	142
1971	1,311	0	0	106	0	NA	1,417	147	178
1972	1,286	0	0	115	0	NA	1,401	166	168
1973	1,214	0	10	137	0	NA	1,361	200	178
1974	1,318	0	1	96	0	NA	1,415	240	239
1975	1,397	0	9	107	0	NA	1,513	320	332
1976	1,444	0	0	144	0	NA	1,588	289	262
1977	1,500	0	4	205	0	NA	1,709	351	312
1978	1,340	0	1	217	0	NA	1,558	405	404
1979	1,425	0	5	231	0	NA	1,660	414	662
1980	1,477	0	24	248	0	NA	1,749	436	764
1981	1,408	0	32	386	0	NA	1,826	332	511
1982	1,460	0	123	108	0	NA	1,691	326	450
1983	1,506	0	93	49	0	NA	1,648	310	379
1984	1,505	0	77	79	0	NA	1,661	335	354
-----\$US million-----									

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 7--Mali

Year	Milled production 1/ in stocks	Change in stocks	Food			Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	1,019	0	0	15.98	0	70	943	20.0	37.0	NA
1967	1,036	0	0	12.88	0	163	869	18.0	34.0	185.4
1968	912	(25)	0	10.53	0	161	860	18.0	31.0	209.5
1969	1,067	25	0	31.96	0	154	815	17.0	39.0	215.9
1970	953	(100)	30	19.24	0	175	841	32.8	37.5	236.3
1971	893	50	12	51.45	0	144	922	39.5	49.1	260.3
1972	747	25	43	40.95	0	144	858	45.1	63.4	256.2
1973	811	25	69	104.79	0	139	806	58.5	106.3	282.3
1974	1,067	0	121	121.70	0	150	904	64.0	129.2	326.1
1975	1,016	0	58	68.57	0	167	1,027	71.9	136.2	332.0
1976	1,138	0	9	21.53	0	158	888	94.4	111.3	347.3
1977	983	(50)	0	18.22	0	175	932	124.6	111.1	421.2
1978	1,223	50	38	34.16	31	166	908	94.2	199.4	508.9
1979	1,118	(75)	10	34.82	3	177	1,013	145.7	270.3	510.8
1980	838	(25)	14	78.99	0	173	1,012	204.9	308.3	667.3
1981	1,059	100	19	78.98	0	140	896	154.2	269.0	728.7
1982	975	(50)	45	101.22	0	156	999	144.8	233.6	804.9
1983	937	25	75	108.30	0	138	1,045	165.3	245.6	906.1
1984	663	(60)	138	262.20	0	153	1,124	194.2	256.4	960.0

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table B--Niger

Year	Milled production 1/ in stocks	Change in stocks	Food			Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	1,135	0	0	9.17	0	96	984	35.0	45.0	NA
1967	1,369	0	0	10.74	0	301	845	33.0	46.0	14.4
1968	976	(150)	0	4.29	0	319	903	34.5	41.5	18.3
1969	1,414	150	19	4.96	0	274	876	39.5	49.9	21.5
1970	1,128	(175)	15	2.39	0	343	913	46.7	55.1	35.8
1971	1,253	100	0	7.20	0	297	938	58.4	53.1	49.4
1972	1,150	(50)	20	0.90	0	301	923	71.0	67.9	53.9
1973	787	0	48	26.20	0	280	947	99.5	112.1	64.1
1974	1,127	100	141	39.10	0	229	840	81.6	145.1	91.8
1975	861	(75)	60	(17.70)	0	304	792	138.5	147.9	111.6
1976	1,338	75	58	35.20	0	250	785	171.6	198.4	129.8
1977	1,498	(75)	3	30.30	0	360	932	196.6	241.3	118.2
1978	1,526	0	27	50.13	0	392	1,186	287.7	410.6	197.2
1979	1,633	15	14	19.90	0	390	1,185	485.0	694.6	262.8
1980	1,764	(35)	4	83.98	0	426	1,260	571.9	794.1	399.0
1981	1,671	(105)	7	137.77	0	447	1,354	497.5	662.8	605.0
1982	1,688	(5)	35	98.76	0	442	1,360	369.2	533.7	603.2
1983	1,727	40	22	50.30	0	438	1,363	370.9	473.0	632.6
1984	1,062	0	20	28.40	0	420	1,352	303.9	340.8	677.9

NA = Not available.

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 9--Sierra Leone

Year	Milled production 1/ in stocks	Change in stocks	Food			Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	288	0	4	55.0	0	53	294	77.5	86.6	64.9
1967	294	0	4	48.0	0	53	287	68.0	80.6	65.6
1968	316	0	5	35.0	0	55	280	92.6	81.6	63.6
1969	299	0	4	34.5	0	52	301	105.1	100.7	61.4
1970	299	0	2	86.5	0	60	316	100.0	105.3	59.1
1971	349	0	5	54.2	0	64	295	95.8	102.5	68.0
1972	334	0	6	33.4	0	60	329	113.5	107.7	72.8
1973	341	0	2	85.9	0	64	363	129.1	141.0	95.3
1974	340	0	2	70.4	0	63	349	142.8	199.6	145.7
1975	375	0	1	25.4	0	64	306	129.0	167.6	169.4
1976	368	0	1	39.7	0	66	343	113.9	149.8	167.2
1977	416	0	7	41.3	0	73	353	142.7	165.0	195.4
1978	359	0	1	53.9	0	64	406	185.1	253.0	242.6
1979	375	0	4	123.8	0	75	410	197.1	336.3	285.6
1980	367	0	29	63.0	0	70	399	213.5	385.9	336.4
1981	347	0	16	70.1	0	67	386	153.0	282.0	338.2
1982	349	(1)	23	105.0	0	71	405	110.0	260.0	372.4
1983	365	1	21	38.4	0	66	345	107.0	133.0	360.6
1984	330	0	23	37.6	0	61	365	133.3	146.6	341.6

NA = Not available.

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 10--Somalia

Year	Milled production 1/ in stocks	Change	Food			Non- food use	Food avail- ability 2/	Merch- andise exports	Merch- andise imports	Total outstanding debt
			Milled	Food aid	Commercial Imports					
-----1,000 metric tons-----										
1966	253	0	2	39.8	1	36	220	30.2	38.8	NA
1967	291	0	0	32.1	2	37	246	28.2	39.5	NA
1968	260	0	0	32.1	0	35	288	29.5	41.5	NA
1969	270	0	0	45.2	0	35	270	33.3	48.9	NA
1970	230	0	10	47.3	2	33	292	31.1	40.4	NA
1971	224	0	8	126.1	5	38	320	38.1	49.5	NA
1972	319	0	15	66.4	0	42	263	56.5	62.8	NA
1973	318	0	15	46.8	10	43	328	57.1	97.5	126.8
1974	290	0	12	51.0	2	43	336	64.0	133.7	176.9
1975	244	0	52	172.6	0	44	470	88.6	141.1	230.2
1976	225	0	52	122.5	1	41	376	81.0	153.1	287.1
1977	261	0	44	92.1	0	38	323	71.3	179.0	387.4
1978	254	0	50	37.0	0	39	309	109.5	239.4	525.4
1979	257	0	68	153.1	0	38	436	106.0	342.9	597.1
1980	264	0	126	192.5	0	46	530	133.3	401.5	714.1
1981	370	0	112	310.2	0	45	641	175.4	370.5	1,026.7
1982	399	0	205	186.5	0	45	717	137.0	484.0	1,151.4
1983	358	0	68	181.9	0	10	639	100.0	450.0	1,235.5
1984	475	0	181	125.5	0	10	655	62.0	406.0	1,233.0

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 11--Sudan

Year	Milled production 1/ in stocks	Change	Food aid imports	Commercial imports	Exports	Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	1,185	0	40	137.8	94	176	1,093	208.2	210.7	140.5
1967	2,445	0	67	159.9	9	292	2,371	215.1	213.6	204.2
1968	1,239	0	0	184.9	62	234	1,128	244.3	248.5	226.7
1969	1,997	0	25	88.2	24	262	1,824	256.2	230.3	280.4
1970	2,134	0	10	254.0	31	271	2,096	284.3	268.2	293.4
1971	2,211	0	9	221.9	64	278	2,101	309.0	293.6	309.1
1972	1,792	0	12	215.1	83	264	1,673	324.7	316.7	371.4
1973	2,169	0	26	237.0	125	288	2,019	441.1	334.4	500.5
1974	2,370	0	33	101.2	118	320	2,066	384.4	541.7	895.3
1975	2,688	0	29	152.5	61	373	2,435	411.8	743.2	1,272.8
1976	2,576	0	14	173.7	88	383	2,294	588.8	625.7	1,632.5
1977	2,849	(50)	68	51.4	133	409	2,376	658.2	644.2	1,943.9
1978	3,327	(110)	102	209.9	65	476	2,987	563.0	623.9	2,295.2
1979	2,204	(170)	160	200.5	198	325	1,872	514.1	735.8	3,251.6
1980	2,831	170	181	204.8	340	395	2,651	689.4	1,127.4	3,801.9
1981	4,036	(60)	239	164.6	258	594	3,528	792.7	1,633.6	4,540.9
1982	2,475	(390)	269	293.7	388	360	1,899	400.9	750.3	5,117.3
1983	2,296	350	202	259.6	280	NA	2,828	514.2	703.2	5,682.0
1984	1,485	275	270	281.0	100	NA	2,211	519.0	599.8	5,658.8

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 12--Tanzania

Year	Milled production 1/ in stocks	Change	Food aid	Food commercial imports	Commercial Exports	Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
-----\$US million-----										
1966	1,310	0	23	10.86	0	132	1,212	259.2	219.1	97.2
1967	950	0	7	34.41	0	98	893	244.4	212.5	139.8
1968	1,075	0	8	57.62	0	110	1,031	238.0	229.9	143.2
1969	1,103	0	4	44.81	0	111	1,040	240.4	218.1	188.7
1970	1,300	0	5	61.31	20	131	1,215	245.9	283.5	264.7
1971	1,352	0	9	84.55	27	138	1,281	262.0	345.3	285.0
1972	1,406	0	6	177.45	4	142	1,444	316.2	359.8	369.6
1973	1,249	0	8	34.51	11	127	1,154	363.6	437.8	463.7
1974	1,303	0	4	426.79	0	134	1,600	399.2	660.4	646.5
1975	2,072	0	141	315.46	0	211	2,318	372.9	670.0	857.0
1976	2,215	0	89	26.03	0	223	2,106	490.4	555.6	974.5
1977	2,700	0	117	48.60		331	2,534	538.9	647.3	1,247.4
1978	2,553	0	73	59.78	23	324	2,339	476.9	995.7	1,376.7
1979	2,793	0	29	58.33	49	363	2,469	545.7	960.7	1,551.9
1980	2,784	0	202	214.80	1	361	2,839	507.6	1,068.7	2,090.7
1981	2,815	0	248	45.21	0	363	2,745	563.4	1,022.3	2,248.6
1982	2,921	0	267	79.05	0	368	2,898	413.0	983.5	2,450.6
1983	2,897	0	228	36.70	0	364	2,798	378.8	692.7	2,641.8
1984	3,061	0	188	175.84	0	372	3,054	368.8	736.8	2,654.3

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 13--Togo

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	292	0	0	13.9	0	7	244	48.0	46.6	NA
1967	235	0	0	10.1	0	7	295	50.1	44.8	31.1
1968	322	0	0	9.4	0	7	238	60.4	49.2	32.3
1969	295	0	0	13.6	0	8	328	72.7	59.8	36.5
1970	242	0	0	19.2	0	5	309	68.0	67.0	39.8
1971	196	0	0	17.1	0	5	254	73.1	75.2	47.0
1972	237	0	0	20.6	0	5	211	69.9	81.3	45.9
1973	228	0	0	22.0	0	5	254	71.6	83.7	58.4
1974	265	0	0	6.1	0	4	231	215.2	98.1	89.3
1975	264	0	0	15.3	0	4	276	140.9	211.5	119.8
1976	218	0	0	15.7	0	5	275	158.8	180.6	177.6
1977	241	0	0	53.8	0	6	265	199.3	252.7	320.6
1978	265	0	0	30.6	0	5	266	262.0	410.9	644.1
1979	301	0	0	39.1	0	6	298	290.6	464.3	873.8
1980	286	0	0	46.4	0	6	342	475.6	523.9	924.0
1981	279	0	0	63.2	0	8	341	336.4	373.9	854.6
1982	299	0	0	86.8	0	9	357	302.5	339.9	819.1
1983	282	0	0	97.0	0	12	384	231.1	249.9	802.9
1984	429	0	16	63.8	0	11	351	239.5	237.6	659.2

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 14--Zaire

Year	Milled production 1/ in stocks	Change in stocks	Food		Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial Exports					
-----1,000 metric tons-----									
1966	357	0	154	35.9	0	0	547	488.0	320.6
1967	392	0	101	81.6	0	0	575	475.6	274.0
1968	356	0	72	90.5	0	0	518	589.9	310.6
1969	468	0	32	111.1	0	0	610	685.8	407.0
1970	519	0	3	202.8	0	0	725	799.5	583.2
1971	568	0	20	202.1	0	0	790	696.9	684.2
1972	617	0	33	191.1	0	0	841	690.3	752.1
1973	629	0	5	240.4	0	0	874	1,038.3	977.3
1974	657	0	0	338.2	0	0	995	1,520.7	1,439.3
1975	684	0	1	378.2	0	0	1,063	863.4	993.5
1976	704	0	18	367.4	0	0	1,089	1,024.2	1,293.5
1977	705	0	34	335.1	0	0	1,074	1,056.4	1,602.4
1978	695	0	16	464.6	0	0	1,176	1,834.2	1,024.5
1979	704	0	107	224.2	0	0	1,034	1,834.3	1,106.9
1980	758	0	156	193.9	0	0	1,108	2,268.6	1,761.0
1981	853	0	201	381.7	0	0	1,435	1,677.9	1,636.7
1982	907	0	81	242.8	0	0	1,230	1,600.8	1,436.3
1983	897	0	66	93.9	0	0	1,057	1,685.8	1,329.8
1984	928	0	181	174.0	0	0	1,283	1,893.2	1,321.2

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 15--Lesotho

Year	Milled production 1/ in stocks	Change	Food			Non-food use	Food avail-ability	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----									-----\$US million-----	
1966	213	0	0	8.00	0	52	169	6.5	33.0	NA
1967	222	0	0	19.80	0	56	186	6.9	33.3	4.4
1968	209	0	0	33.30	0	54	188	5.9	33.5	6.4
1969	204	0	0	42.20	0	49	197	6.8	33.5	7.1
1970	182	0	0	40.70	0	49	174	5.9	32.0	7.5
1971	233	0	0	40.00	0	54	219	4.2	39.1	8.0
1972	143	0	16	37.50	0	37	159	7.9	55.9	9.5
1973	166	0	22	35.50	0	51	172	12.7	75.4	8.3
1974	264	0	11	35.70	0	67	244	14.4	99.5	10.2
1975	152	0	8	39.10	0	42	157	14.0	151.0	14.1
1976	119	0	12	57.70	0	45	144	18.0	189.0	16.1
1977	237	0	10	53.70	0	68	233	15.0	211.0	24.1
1978	287	0	13	60.90	0	74	286	33.0	243.0	32.5
1979	228	0	17	50.60	0	66	230	46.0	324.0	52.0
1980	193	0	37	130.10	0	60	301	60.0	426.0	62.7
1981	195	0	35	113.50	0	54	290	43.4	467.7	77.1
1982	123	0	14	129.40	0	41	226	35.7	446.2	117.8
1983	122	0	32	151.20	0	33	272	31.6	503.2	133.7
1984	140	0	70	170.00	0	31	349	29.5	452.7	134.3

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 16--Morocco

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	2,556	15	228	412	0	1,044	2,167	428	442	390.8
1967	3,102	(217)	480	434	0	859	2,941	424	480	489.7
1968	6,788	(554)	598	59	0	1,773	5,117	448	509	572.0
1969	4,307	563	116	37	0	1,227	3,796	484	522	585.5
1970	4,135	259	205	209	0	1,188	3,620	487	624	712.8
1971	5,272	(6)	402	365	0	1,544	4,489	499	637	870.0
1972	5,059	(322)	458	16	0	1,445	3,766	642	709	907.6
1973	3,101	(3)	147	851	0	755	3,342	913	1,037	997.8
1974	4,722	99	153	732	0	1,499	4,207	1,704	1,692	1,220.1
1975	3,616	(155)	57	1,359	0	971	3,906	1,529	2,266	1,752.5
1976	5,566	(739)	29	1,022	0	1,752	4,126	1,247	2,308	2,337.1
1977	2,829	649	139	1,283	3	1,565	3,331	1,283	2,821	4,069.4
1978	4,639	(70)	145	1,550	0	1,824	4,439	1,488	2,629	5,144.4
1979	4,027	99	67	1,589	0	1,751	4,032	1,937	3,245	6,203.8
1980	4,383	(65)	80	1,741	0	1,812	4,326	2,414	3,770	7,108.7
1981	2,037	12	254	2,471	0	1,363	3,411	2,283	3,840	7,983.3
1982	4,794	185	315	2,520	0	1,880	5,935	2,035	3,802	9,053.7
1983	3,489	190	235	1,757	0	1,932	3,739	2,088	3,303	9,445.3
1984	3,684	(232)	382	2,509	0	1,901	4,442	2,171	3,586	NA

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 17--Senegal

Year	Milled production 1/ in stocks	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----										
1966	549	(5)	18	316.82	28	67	958	150.0	161.0	59.1
1967	801	5	53	293.20	25	112	763	139.0	159.0	63.5
1968	515	(135)	24	344.59	13	134	887	145.3	192.8	64.9
1969	777	40	23	417.84	23	109	863	149.5	199.3	88.7
1970	477	(55)	19	273.28	24	129	861	158.7	203.7	102.8
1971	693	110	16	354.05	29	98	830	135.5	221.9	126.0
1972	367	(90)	41	329.77	7	120	846	225.3	283.9	139.6
1973	587	40	42	475.53	0	99	825	214.2	374.7	193.8
1974	919	15	65	348.71	12	109	895	417.2	553.0	263.3
1975	747	(35)	30	188.73	8	133	962	503.0	611.5	313.6
1976	636	(55)	21	409.70	1	121	1,001	513.8	659.5	366.5
1977	435	25	64	355.22	8	119	953	667.2	772.5	434.6
1978	903	120	108	366.09	29	103	897	401.8	744.3	639.8
1979	632	(155)	26	445.46	11	137	1,071	547.2	852.3	822.4
1980	645	15	62	502.05	0	121	1,089	481.1	972.8	925.8
1981	884	65	64	429.38	0	113	1,090	511.4	1,009.2	989.2
1982	730	(100)	67	432.18	0	127	1,156	589.7	968.4	1,236.1
1983	485	20	49	502.00	0	122	1,180	568.7	879.8	1,498.1
1984	661	83	185	490.50	0	120	1,123	548.0	804.5	1,555.1

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 18--Zambia

Year	Milled production 1/ in stocks	Change	Food aid	Commercial imports	Exports	Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
	1,000 metric tons						\$US million			
1966	985	5	0	64	40	0	1,014	625	370	158.1
1967	975	(161)	0	54	198	0	670	651	446	195.2
1968	905	174	0	71	64	0	1,086	748	500	209.8
1969	910	18	0	78	8	0	998	1,194	439	246.6
1970	767	(37)	0	148	0	0	878	942	487	547.9
1971	1,067	(14)	0	351	9	0	1,395	671	562	534.6
1972	1,091	73	0	183	2	0	1,345	760	566	639.2
1973	937	0	5	82	50	0	974	1,130	539	703.7
1974	1,207	0	0	93	111	0	1,189	1,396	791	807.4
1975	1,100	0	5	161	17	0	1,249	803	947	1,155.7
1976	1,197	(189)	20	84	9	0	1,103	1,029	668	1,298.9
1977	1,106	(149)	41	98	26	40	1,031	897	683	1,399.3
1978	902	279	12	87	61	40	1,179	831	618	1,463.6
1979	788	3	63	131	30	30	925	1,409	756	1,823.1
1980	781	34	47	334	0	30	1,166	1,457	1,114	2,185.0
1981	1,067	(14)	96	124	0	30	1,243	996	1,065	2,229.9
1982	779	9	30	217	0	40	995	923	1,158	2,378.3
1983	988	(1)	75	130	0	35	1,157	992	839	2,618.4
1984	920	8	116	62	0	20	1,086	883	724	2,778.7

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 19--Zimbabwe

Year	Milled production 1/ in stocks	Change	Food			Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
										-----\$US million-----
1966	1,286	(51)	0	101	172	50	1,114	280	273	NA
1967	1,889	10	0	67	650	100	1,216	272	301	NA
1968	1,144	73	0	87	225	50	1,029	263	333	NA
1969	2,002	(67)	0	58	650	100	1,243	325	321	NA
1970	1,438	9	0	84	300	100	1,131	370	378	NA
1971	2,212	(104)	0	64	700	200	1,272	404	456	NA
1972	2,726	(275)	0	20	825	200	1,446	516	479	NA
1973	1,417	236	0	65	475	100	1,143	687	605	220.7
1974	2,512	(238)	0	214	700	200	1,588	867	868	220.5
1975	2,180	151	0	25	842	200	1,314	927	927	189.8
1976	2,187	(302)	0	11	345	200	1,351	974	703	144.6
1977	2,114	(54)	0	0	392	200	1,468	901	671	153.8
1978	2,116	164	0	0	507	250	1,523	923	654	418.1
1979	1,532	261	0	149	219	250	1,474	1,080	875	523.9
1980	2,070	(45)	0	98	63	300	1,760	1,446	1,339	697.1
1981	3,286	(1,049)	3	14	238	350	1,666	1,451	1,534	879.9
1982	2,229	169	3	28	348	350	1,731	1,312	1,472	1,218.3
1983	1,173	968	10	54	493	300	1,412	1,154	1,070	1,522.1
1984	1,703	(329)	126	255	0	310	1,445	1,174	989	1,445.8

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 20--Algeria

Year	Milled production 1/	Change in stocks	Food aid imports	Commercial imports	Exports	Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
-----1,000 metric tons-----									-----\$US million-----	
1966	765	0	0	514	0	5	1,275	768	661	NA
1967	1,611	0	0	733	0	12	2,332	740	585	372
1968	2,081	0	0	710	0	14	2,776	869	766	477
1969	1,800	0	0	458	0	14	2,244	898	952	678
1970	2,013	0	0	459	0	21	2,451	1,010	1,078	937
1971	1,695	0	0	744	0	26	2,413	816	996	1,233
1972	2,306	(300)	0	1,214	0	5	3,215	1,224	1,303	1,488
1973	1,537	0	0	1,432	0	41	2,928	1,950	2,141	2,932
1974	1,427	(150)	0	1,791	0	18	3,050	4,944	3,667	3,305
1975	2,599	(1,141)	0	2,543	0	104	3,897	4,501	5,452	4,477
1976	2,223	(143)	0	1,854	11	698	3,225	5,221	4,693	5,934
1977	1,089	872	0	2,289	0	729	3,522	6,009	6,198	8,316
1978	1,482	209	0	3,131	0	1,021	3,802	6,340	7,293	13,427
1979	1,545	606	0	2,929	0	1,061	4,020	9,484	7,805	16,128
1980	2,306	(139)	0	3,405	0	1,371	4,202	13,652	9,596	16,334
1981	2,114	(238)	0	2,992	0	1,517	3,351	14,112	10,088	15,359
1982	1,464	169	0	4,043	0	1,443	4,234	13,509	9,889	13,898
1983	1,239	(50)	0	3,801	0	1,406	3,585	12,742	9,516	12,916
1984	1,789	(100)	0	4,030	0	1,595	4,124	12,622	9,408	12,801

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 21--Cameroon

Year	Milled production 1/ in stocks	Change in stocks	Food			Non- food use	Food availability 2/	Merch- andise exports	Merch- andise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	772	0	0	38.6	0	124	588	145.0	146.0	NA
1967	628	0	0	51.6	0	104	719	158.0	188.0	52.7
1968	641	0	0	61.8	0	106	584	197.0	188.0	92.7
1969	739	0	0	62.4	0	117	586	228.0	204.0	107.7
1970	662	0	0	80.8	0	110	710	218.7	190.8	130.9
1971	631	0	0	99.7	0	107	655	235.7	223.1	161.9
1972	612	0	5	87.7	0	105	619	239.3	257.6	195.4
1973	625	0	1	89.7	0	106	598	409.5	310.5	236.8
1974	757	0	3	77.6	0	128	578	493.2	389.9	274.9
1975	1,091	0	4	64.8	0	169	657	512.0	540.3	371.7
1976	885	0	4	93.0	0	145	1,043	584.2	554.9	513.3
1977	829	0	5	110.7	0	141	860	809.6	719.7	861.3
1978	839	0	5	145.7	0	146	833	1,095.9	949.0	1,184.8
1979	848	0	8	131.5	0	146	832	1,351.8	1,267.9	1,684.7

NA = Not available.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 22--Egypt

Year	Milled production 1/ in stocks	Change in stocks	Food aid		Commercial imports		Non-food use	Food availability	Merchandise exports	Merchandise imports	Total outstanding debt
			Imports	Exports	Imports	Exports					
-----1,000 metric tons-----											
1966	5,356	(96)	0	2,442	348	2,041	5,314	597	867	NA	
1967	5,213	(4)	0	2,889	434	2,036	5,629	595	869	1,460	
1968	5,711	50	0	2,417	570	2,093	5,516	664	773	1,489	
1969	5,418	170	0	1,561	773	1,946	4,431	735	875	1,448	
1970	5,733	10	0	1,306	654	1,988	4,407	817	1,084	1,639	
1971	5,889	(40)	27	2,421	514	2,122	5,660	851	1,131	1,802	
1972	5,806	5	14	2,165	456	2,048	5,486	813	1,170	1,915	
1973	6,146	(70)	378	2,195	298	2,204	6,146	1,000	1,429	2,224	
1974	6,178	55	59	2,938	136	2,559	6,535	1,672	2,914	2,851	
1975	6,509	(15)	534	3,289	104	2,935	7,278	1,567	3,941	4,850	
1976	6,689	10	1,050	2,937	211	3,122	7,353	1,609	3,842	5,775	
1977	5,930	15	2,124	2,827	223	3,047	7,626	1,974	4,038	8,084	
1978	6,614	(105)	2,979	2,956	153	3,465	8,826	1,939	4,743	9,943	
1979	6,379	145	1,923	3,489	123	3,226	8,587	2,424	6,002	11,462	
1980	6,563	(150)	2,091	4,309	184	3,721	8,907	3,854	6,814	12,786	
1981	6,664	(100)	2,368	4,941	135	4,021	9,717	3,999	8,782	14,271	
1982	6,886	140	2,359	4,682	25	4,234	9,808	4,018	9,078	15,468	
1983	7,053	(95)	2,267	6,038	21	4,822	10,420	3,693	10,275	15,531	
1984	7,198	(111)	1,927	6,918	65	5,203	10,664	4,033	10,766	21,400	

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

Appendix table 23--Ivory Coast

Year	Milled production 1/ in stocks	Change	Food			Non-food use	Food availability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	435	(30)	0	196.41	0	42	606	325	250	NA
1967	500	10	0	86.00	0	112	419	337	268	166.7
1968	490	5	0	111.51	0	131	486	446	307	194.5
1969	527	15	0	109.27	0	129	485	477	334	207.7
1970	490	(30)	0	184.03	0	145	536	497	375	256.1
1971	589	30	0	131.05	0	140	511	496	400	351.7
1972	486	0	0	158.58	0	147	600	596	460	399.3
1973	501	(25)	0	293.02	0	139	615	862	701	589.8
1974	543	10	0	175.23	0	152	534	1,253	894	705.6
1975	632	15	0	81.61	0	161	478	1,239	1,012	946.6
1976	586	0	0	121.86	0	182	572	1,735	1,161	1,170.8
1977	608	(10)	0	294.55	0	189	682	2,412	1,597	1,985.6
1978	635	(10)	0	316.49	0	190	724	2,616	2,043	3,098.9
1979	664	(5)	0	350.77	0	197	784	2,723	2,233	4,446.6
1980	664	15	0	368.33	0	215	832	3,013	2,614	4,298.0
1981	707	(20)	0	582.74	0	220	1,007	2,435	2,068	4,928.3
1982	754	10	0	541.56	0	239	1,019	2,347	1,790	5,559.9
1983	689	(60)	0	597.08	0	256	1,034	2,066	1,506	5,443.5
1984	921	(174)	0	538.00	0	242	786	2,590	1,212	5,504.6

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 24--Nigeria

Year	Milled production 1/ in stocks	Change	Food			Non-food use	Food avail- ability 2/	Merchandise exports	Merchandise imports	Total outstanding debt
			aid imports	Commercial imports	Exports					
-----1,000 metric tons-----										
1966	6,208	(10)	0	185	0	1,050	7,365	786	638	285
1967	7,248	(5)	1	163	0	1,132	5,235	669	556	382
1968	6,252	(210)	0	128	0	1,314	5,853	583	487	433
1969	8,311	205	16	187	0	1,180	5,480	874	602	463
1970	8,192	(140)	3	281	0	1,491	6,963	1,248	939	494
1971	7,455	(70)	11	448	0	1,466	7,114	1,889	1,393	586
1972	8,121	120	0	429	0	1,358	6,646	2,184	1,366	679
1973	6,762	(320)	0	476	0	1,470	6,807	3,607	1,714	1,157
1974	8,016	430	0	351	0	1,287	6,256	9,698	2,480	1,220
1975	8,272	(10)	3	415	0	1,475	6,949	8,329	5,484	1,086
1976	8,411	(80)	0	862	0	1,538	7,516	10,122	7,478	838
1977	8,633	(166)	0	1,261	0	1,630	7,876	12,431	9,723	893
1978	9,071	(450)	0	2,247	0	1,760	8,671	10,508	11,685	5,142
1979	9,197	142	0	1,391	0	1,873	8,732	16,774	11,862	3,268
1980	9,399	32	0	1,739	0	2,026	8,941	25,741	14,636	9,019
1981	9,480	(125)	0	2,497	0	2,185	9,586	17,961	18,872	11,912
1982	9,962	100	0	2,505	0	2,177	9,907	12,154	14,879	14,189
1983	7,506	(150)	0	2,147	0	2,170	9,789	10,370	11,451	19,731
1984	9,623	376	0	2,189	0	2,064	8,008	11,891	8,882	19,724

(-) denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

2/ Availability is calculated using production from the previous year because of late harvests.

Appendix table 25--Tunisia

Year	Milled production 1/ in stocks	Change in stocks	Food			Non- food use	Food avail- ability	Merch- andise exports	Merch- andise imports	Total outstanding debt
			Milled in stocks	Food aid imports	Commercial imports					
-----1,000 metric tons-----										
										-----\$US million-----
1966	434	39	71	194	0	168	571	138	250	281.9
1967	357	(7)	365	103	0	193	626	148	262	408.2
1968	519	70	223	55	0	170	697	157	218	455.5
1969	387	(30)	238	317	0	214	698	166	257	486.1
1970	608	15	299	95	0	211	805	189	294	524.0
1971	748	81	254	0	0	221	862	214	334	604.2
1972	1,046	(67)	194	70	0	315	927	313	453	699.6
1973	920	(69)	115	206	0	320	852	416	622	810.3
1974	1,065	(41)	89	233	0	275	1,071	872	972	922.7
1975	1,203	18	61	302	0	424	1,159	799	1,238	1,021.0
1976	1,158	113	30	491	0	367	1,425	781	1,425	1,184.7
1977	755	(70)	142	734	0	362	1,199	776	1,604	1,841.4
1978	956	5	140	597	0	477	1,221	927	1,776	2,457.3
1979	956	(103)	104	898	0	418	1,438	1,538	2,467	3,023.6
1980	1,172	46	125	718	0	529	1,532	1,805	2,879	-3,229.2
1981	1,238	70	48	973	0	580	1,749	2,102	3,139	3,281.7
1982	1,260	(8)	144	913	0	575	1,734	1,625	2,878	3,471.6
1983	926	35	150	1,202	0	509	1,804	1,492	2,669	3,427.1
1984	1,032	70	146	1,035	0	551	1,732	1,777	2,893	NA

NA = Not available.

() denotes a negative number.

1/ Milled production is the quantity of grain on hand after milling.

REPORTS OF RELATED INTEREST

Food Aid and the African Food Crisis, by Shahla Shapouri, Arthur Dommen, and Stacey Rosen. FAER-221. June 1986. 112 pp. \$5.00. Order SN: 001-019-00460-6 from GPO. Finds that 9 of 11 low- and medium-income Sub-Saharan African countries studied may face even greater problems feeding their populations if recent trends continue. These countries rely on food imports and, increasingly, on food aid to meet minimum nutritional requirements for their populations. Improved policies and increased foreign exchange earnings could help about half of the study countries satisfy their consumption needs from domestic production.

The Ivory Coast: An Export Market Profile, by Michael A. Trueblood and Nadine R. Horenstein. FAER-223. September 1986. 44 pp. \$2.25. Order SN: 001-019-00471-1 from GPO. Indicates that this West African coffee and cocoa exporter has import market potential based upon one of the highest rates of real economic growth on the African continent, higher than average population growth rate, and increasing urbanization. In 1983, the country's agricultural imports stood at \$310, up from \$133 million in 1973. France now dominates agricultural trade. But the United States can expand its sales, which since 1970 have represented 2-7 percent of Ivory Coast's total agricultural imports, if it adopts innovative marketing approaches. Premixed feed grain products, tobacco, and preserved milk have the greatest prospects for U.S. export growth in the next 5 years.

Nigeria: An Export Market Profile, by Carl Mabbs-Zeno. FAER-218. April 1986. 64 pp. \$3.00. Order SN: 001-019-00451-7 from GPO. Examines the potential for U.S. agricultural exports to Nigeria. Since 1974, about one-fourth of Nigeria's agricultural imports have come from the United States. Major U.S. exports have been wheat and corn. Nigeria's large population and small domestic farming base assure substantial import demand for many years to come despite debt repayment obligations.

World Indices of Agricultural and Food Production, 1976-85, by International Economics Division. July 1986. 172 pp. \$8.00. Order SN: 001-019-00476-1 from GPO. Presents indices of total and per capita agricultural and food production for 1976-85 and production data for 1976-85 for 111 countries, 12 regions (including Africa), and the world. World agricultural production grew at a compound annual rate of 2.1 percent since 1976, while the rate on a per capita basis was only 0.4 percent.

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